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ABSTRACT

Large numbers of people are still employed in production, marketing, and processing of flue-cured tobacco in eight agricultural subregions in five southeastern states. Mechanization and new technology which is being introduced could result in substantial economic and social problems unless new economic opportunities are developed. However, mechanization has been slowed down by government tobacco programs, which limit acreage and production, and by the uncertain demand for future tobacco products. In 1967, about 295 million man-hours of labor were needed to produce the flue-cured tobacco crop, but if current technological methods were adopted this could be reduced by one-half. A mechanical harvesting system requires a $52,000 outlay for a 40-acre tract. Mechanization would affect 84,000 commercial tobacco farms with over 350,000 residents. In 1966 about 4.1 million residents resided in the area under study. As mechanization releases farm workers from their jobs, growth in nonfarm employment will be necessary to prevent an economic recession and considerable outmigration from the area. (BC)

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POTENTIAL MECHANIZATION IN THE FLUE-CURED TOBACCO INDUSTRY

With Emphasis on Human Resource Adjustment

AGRICULTURAL ECONOMIC REPORT NO. 169
ECONOMIC RESEARCH SERVICE
U.S. DEPARTMENT OF AGRICULTURE

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UNITED STATES DEPARTMENT OF AGRICULTURE
Economic Research Service
Farm Production Economics Division

ERRATA

POTENTIAL MECHANIZATION IN THE FLUE-CURED TOBACCO INDUSTRY
WITH EMPHASIS ON HUMAN RESOURCE ADJUSTMENT
U.S. Dept. Agr., Agr. Econ. Rpt. No. 169
September 1969

The following changes should be entered in the above report:

Page 17 - Footnote 13, line 5, change "difference is" to "difference in".

Page 35 - 2d paragraph from botton of page should be substituted with the following:

> Age distribution of the study area's tobacco farm household population shows 31 percent were under 15 and nearly 4 percent, 65 or over (table 16). Thus, a total of 35 percent were in what is generally considered the dependent age group. Of the remaining 64 percent, 25 percent were between 15 and 35, 15 percent from 35 to 45, and 26 percent from 45 to 65.

Page 70 - Paragraph 5, line 12, change "(tables 32 and 34)." to "(tables 32 and 35)."

Page 72 - Line 4, change "11 percent" to "13 percent".

Line 12, change "(table 34)." to "(table 35)."

Page 73 - Line 13, change "(tables 34 and 35)." to "(tables 34 and 37)."

Page 74 - Paragraph 3, line 9, change "(table 36)." to "(table 37)."

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The study was conducted under the coordination of W.B. Sundquist, Farm Production Economics Division (FPED), ERS. In general, researchers from FPED and the Marketing Economics Division (MED) were responsible for sections of the report that discuss mechanization of the tobacco industry and Government tobacco programs; researchers from the Economic Development Division (EDD) were responsible for sections of the report that discuss characteristics of workers in the tobacco industry and employment and economic activities in the study area.

Members of the Task Group responsible for final drafting of the report were: Robert C. McElroy, EDD; Earle E. Gavett and Owen K. Shugars, FPED; and Donn Reimund, MED.

Other contributors were: Ivars Gutmanis, Gene A. Rowe, Calvin L. Beale, Edward J. Smith, Avra Rapton, Claude Haren, and Alan Bird, EDD; and Bob Davis, Walter Sellers, and John G. Stovall, FPED.

The Department's Agricultural Stabilization and Conservation Service provided essential data and information on tobacco programs.

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Washington, D.C. 20250 September 1969

SUMMARY AND POLICY IMPLICATIONS

Summary

Large numbers of people are still employed in the production, marketing, and processing of flue-cured tobacco in the Southeastern United States. Mechanization and new technology in this industry, and the resulting displacement of workers, could constitute a problem of substantial social and economic proportions unless new employment opportunities are developed. Full mechanization of the tobacco industry, however, is tending to be inhibited by certain environmental forces. Uncertainty about future demand for tobacco products surely influences investment decisions of farmers. Government tobacco programs, which limit acreage and production and restrict leasing and rental arrangements, are largely barriers to the adoption of full-scale mechanization. Also, extensive program changes and rapid mechanization would have important implications for the people involved.

Mechanization of the Tobacco Industry

During 1967, about 295 million man-hours of labor were required to produce the Nation's flue-cured tobacco crop. Current technology, if adopted without restriction by Government programs, could reduce labor input in tobacco production by about half.

Production mechanization, however, is costly. A mechanical harvesting system requires a capital outlay of $52,000 ($40,000 for bulk-curing barns and $12,000 for the harvester and support equipment). Operated at capacity (about 40 acres), the mechanical harvester is the least costly form of harvesting when wage rates exceed a level of about $1.35 per hour; this wage level will probably be reached soon.

In addition to equipment cost, the small size of production units, resulting largely from restrictive Government programs, has served as an effective deterrent to extensive mechanization of production, particularly in harvesting.

To acquire production units of 40 acres would require substantial combining of fragmented allotments. In the Coastal Plain of North Carolina--the area with largest units--the average production unit was only 8.9 acres in 1968. Multiple-unit farms (farms having one or more sharecroppers) averaged 19 acres of tobacco, compared with 7 acres for single units. The Piedmont area had even smaller production units, estimated at about 5.8 acres of tobacco per unit.

Mechanical harvesting increases the need for skilled harvester operators, tractor drivers, and hoist operators. Employment of more skilled workers, primarily males, would reduce the traditional, seasonal opportunities for females and children to work the harvest; thus, family income would be expected to decline in many cases if mechanization occurs rather fully.

Mechanization of auction sales and processing plants is occurring rapidly. This mechanization reduces the need for heavy manual labor. Mechanized handling of loose leaf tobacco increases the proportion of jobs that can be done by women. Overall, employment in the marketing and processing industries can be expected to decline substantially in the future.

Though complete mechanization of production would probably have minimal effects on the processing industry, marketing (auction) facilities would probably be relocated near the tobacco production centers; for example, they would shift from the Piedmont area to the Coastal Plain.

Demand for Tobacco

Uncertainty about future demand further deters producers from investing large sums in new technology that may have limited alternative uses. Demand for tobacco in 1975 is currently projected to be about the same as in 1968. However, concern over the relationship between cigarette smoking and health is increasingly causing various public and private agencies to try to reduce demand. The future effect of the health issue on demand is not known. Changing technology in cigarette manufacturing has, however, reduced and is expected to further reduce the amount of domestically produced tobacco used per 1,000 cigarettes manufactured.

People Affected

About 84,000 commercial tobacco farms in the study area (fig. 1) and over 350,000 persons in these farm households could be directly affected by mechanization and other changes in the flue-cured industry. If mechanization occurs rather fully, many workers would have to find alternative sources of income, though even now, a number have income from other sources. In 1964, about 46 percent of these farms were operated by tenants, and over half the people in commercial farm households were tenant families. Compared with whites, a much higher proportion of Negro farmers are tenant operators; however, the total number of each is similar. Average age of tobacco farmers is 47, compared with about 37 for the total U.S. work force. This higher average age is coupled with an educational attainment substantially below that of all U.S. workers--7.6 years of school, compared with 12.2.

Hired workers on flue-cured tobacco farms have highly seasonal employment. In the Coastal Plain area of North Carolina, the seasonal job of longest duration is priming--averaging 16.6 days during the 1967 harvest. Croppers averaged 3.6 months of employment in tobacco in the same year. These croppers, with an average educational attainment of 4.3 years, would face especially severe problems in obtaining new employment.

Economic Activity in the Study Area

About 4.1 million residents resided in the flue-cured area under study in 1966. Population in the area had increased 8 percent from 1960. Yet net outmigration from 1960 to 1966 amounted to 69,500

Note: Although "Negro" is used in this text, the figures upon which the analysis is based may include a very small percentage of American Indians, Spanish Americans, and other minority groups because of the rapidly changing composition of this highly mobile work force.

persons. The 1967 unemployment rate in the study area was only 4 percent, and nonmetropolitan areas within the area averaged 4.6 percent. These rates do not, however, indicate the extent of hidden unemployment and underemployment, especially on the smaller farms.

In the study area, the number of children born per woman--particularly to Negro women--is appreciably above the U.S. average. Thus, substantial expansion in local jobs is needed to maintain a satisfactory employment level and to decrease outmigration to other areas where the outmigrants would be at a relative disadvantage in the labor force.

As mechanization of agriculture releases workers, compensating growth in nonfarm employment will be required for satisfactory economic and human resource adjustment. Without such growth, economic recession and increased outmigration will occur, which could create problems of serious proportion. Fortunately, nonfarm employment in the study area grew at a rate of 24 percent between 1962 and 1967, compared with 14 percent for the Nation. Industries likely to use low-skill workers displaced from the tobacco industry are manufacturing, trades, and services. However, specific future job requirements of these growing industries are not known.

Policy Implications

Government program restrictions hinder amalgamation of production units into a size of operation that would effectively use available production technology. Of the 194,374 farms receiving flue-cured tobacco allotments in 1968, less than 1 percent had allotments exceeding 20 acres per farm. Eighty-nine percent had allotments of less than 6 acres each. Average allotment per farm was 3.13 acres. Major program restrictions curtailing amalgamation are discussed below.

Lease and transfer of allotments are restricted to within-county boundaries; tobacco acreage on the producing farm after transfer cannot exceed 50 percent of the recipient farm's cropland; and lease and transfer of allotment is for a single year only. New leases must be negotiated annually.

Production through renting allotment and poundage quotas from others is limited to production of rented allotment and quotas on the farm from which they were rented. Thus, tobacco fields are often miles apart.

Purchases of acreage and poundage quotas must include purchase of the whole farm to which they are allocated; thus the cost of such purchases is substantial.

However, if extensive program changes were authorized, removing the restrictions discussed above, important employment and income implications would result. Some of the more important are outlined below.

(1) Permitting transfer of allotment across county boundaries would remove tobacco production from hilly areas with small, irregular fields and concentrate it in areas where large, level fields

could be effectively mechanized. In the process, the hilly areas would lose employment, related economic activities, and tax base.

(2) Amalgamation of operating units into units of approximately 40 acres and fully mechanizing production would mean that a large number of people now deriving income from tobacco production would be deprived of this source of income.

(3) Under a mechanized production system, many hired workers now employed in tobacco would lose this opportunity for work. Moreover, such workers tend to have skills that are less than competitive in other labor markets.

(4) Welfare programs would have to be expanded for some older and less educated farmers and workers displaced from employment.

(5) Retraining of displaced workers would need to be accelerated, as would the rate of growth in economic sectors other than agriculture, if widespread unemployment or high outmigration rates or both are to be avoided in the study area.

Effects of alternative policies on production, mechanization, and possible displacement of workers can be defined to a substantial degree. It can also be generally shown that the workers likely to be affected are highly disadvantaged, compared with the total U.S. work force. Specific data on the impact of displacement of both hired and family workers, however, are less readily defined because of the dearth of information relative to these workers. Information is lacking on such worker characteristics as age, sex, mobility, and the extent of dependence on income from tobacco. In addition, little is known of alternative employment opportunities and specific skills and educational requirements of them. Such data are needed for more complete evaluation of the potential social and economic consequences of changes in the tobacco industry.

POTENTIAL MECHANIZATION IN THE FLUE-CURED TOBACCO INDUSTRY WITH EMPHASIS ON HUMAN RESOURCE ADJUSTMENT

by a Task Group in the
Economic Research Service

I. INTRODUCTION

Background and Scope of Problem

Large numbers of people are still employed in the production, marketing, and processing of flue-cured tobacco. These economic activities are concentrated in the Southeastern United States. The flue-cured tobacco area of North Carolina and adjacent counties in South Carolina constitutes one of the most, if not the most, heavily populated rural areas in the United States. Much of this population currently relies on full- or part-time employment in the tobacco industry. Some individuals are seasonally employed in more than one of the production, marketing, and processing stages of the industry. Areas in several adjacent States also rely significantly on the flue-cured tobacco industry.

Several recent and highly interrelated developments have resulted in the expectation that total employment in the flue-cured tobacco industry will decline and that the makeup (sex and skills, for example) of the working force will change as the industry becomes more mechanized. Of particular importance is the potential for increasing use of harvesting aids and adoption of new harvesting machines, more extensive mechanization of materials-handling processes in marketing and warehousing, increased bulk handling of untied tobacco, and modifications of programs to permit transfer and consolidation of tobacco allotments. The last possibility, consolidation of tobacco allotments into larger tracts, is related importantly to mechanization of tobacco production, which--for economic reasons--occurs more slowly on smaller production units than on larger ones.

Thus, mechanization of the flue-cured tobacco industry, the resulting displacement of workers, and the need for new employment opportunities in affected areas could constitute a problem of substantial social and economic proportions. Furthermore, a static or declining demand for tobacco is quite possible. Relationships between smoking and health, now under intensive study and discussion, are important aspects of future demand. Also important are technological developments that reduce the amount of tobacco used per 1,000 cigarettes and the proportion of that tobacco that is domestically produced.

In some areas of the flue-cured tobacco belt, other employment opportunities exert a "pull" influence on workers currently employed in the tobacco industry. Thus, there may simultaneously be some areas where tobacco labor is in short supply and other areas where displacement will leave workers without local employment alternatives.

Also, mechanization possibilities differ widely in individual areas, making it necessary for us to provide some analyses for smaller areas within the flue-cured tobacco belt. For this purpose, we have delineated five production areas within the belt.

It is possible that production, processing, and marketing of burley tobacco will also become highly mechanized in the future. Barring a significant decline in demand, however, extensive fragmentation of current allotments; lack of good, operational mechanical harvesters; and lack of any allotment transfer options under Government programs make mechanization in the burley tobacco industry and widespread worker displacement less likely. Consequently, we have limited this report to flue-cured tobacco.

Our major interests here are describing and analyzing, within the flue-cured tobacco belt, the following:

(1) Characteristics of the tobacco industry, including production, marketing, and processing phases;

(2) Technological and institutional factors affecting the tobacco industry, particularly with respect to future employment in the industry;

(3) The study area's population, particularly workers in the tobacco industry; and

(4) Other economic activities present in the area.

We are primarily interested in identifying the potential for mechanizing the tobacco industry in the several areas within the flue-cured belt, the rate at which such mechanization might be expected to occur, the extent of current and potential worker displacement, and characteristics of workers who may be displaced.

If a major worker-displacement problem appears likely, additional research should be conducted to assess the possibility of absorbing displaced workers in other economic activities and the possible need for retraining, welfare, or other programs to ease the impacts of adjustments on individuals and communities involved.

Possible future changes in the demand for flue-cured tobacco are treated only briefly in this report; they are included to help set the perspective for expected changes in the industry. Though changes in demand could materially affect the tobacco industry, they are extremely difficult to appraise now.

The Study Area

The flue-cured tobacco area delineated for this study consists of eight Census agricultural subregions in five Southeastern States.

These subregions form the five major flue-cured tobacco production areas referred to extensively in this report. Relationships between production areas and Census subregions are shown as follows and in figure 1:

Production Areas	Census Subregions
(1) Piedmont, Va.-N.C.	Va. 18 and N.C. 18
(2) Coastal Plain, N.C.	N.C. 17
(3) Tidewater, N.C.	N.C. 15
(4) Pee Dee-Lumber River	N.C. 16 and S.C. 16
(5) Georgia-Florida	Ga. 29 and Fla. 29

Although manufacturing and other sectors of the economy have expanded noticeably in the five production areas, agriculture remains a major source of employment. Cotton, tobacco, and peanuts are the three major agricultural crops. Broiler production is next in importance.

Production, processing, and sales of tobacco in the study area became an important component in the agricultural sector before the turn of the century. The market for cigarette tobacco expanded in the first half of the 20th century, causing rapid growth of tobacco production and an accompanying increase in rural population in the eastern half of the study area. Currently, almost all the Nation's flue-cured tobacco is grown within the study area. The crop has been under continuous production control for more than 30 years. Primarily because of increases in yield, the program of acreage allotments and price supports has been one of repeated cuts in acreage allotments. As a result, the industry has faced recurrent, serious overproduction problems along with the decreased acreage allotments. Allotments have stablized since 1965, however, under acreage-poundage controls. Because of the typically small size of flue-cured tobacco production units, there has been little incentive to develop technology for mechanization or to adopt expensive mechanical equipment. Also, an adequate supply of labor has been available to producers at relatively low cost. With tobacco allotments averaging 3.13 acres per farm, overhead costs for highly specialized tobacco equipment are high on a per acre or per pound basis. While tobacco is of utmost importance in this region--the basic allotted acreage for flue-cured tobacco was 607,800 acres in 1968--it is not grown uniformly throughout the Southeast. Production areas vary in importance because of topography and other features, and each area will be discussed briefly.

Georgia-Florida Area

The Georgia-Florida Central Coastal Plain was traditionally a cotton economy in the early part of the century, but that crop was decimated by the boll weevil. Farmers of the area adjusted and rapidly introduced flue-cured tobacco. They also expanded production of peanuts, livestock, and watermelons. The Georgia-Florida flue-cured tobacco area has developed more recently than any of the other areas. In 1919, only 11,000 acres were in this crop; by 1929, nearly 70,000 acres were. In 1964, some 52,838 acres and about 97 million pounds of flue-cured tobacco were harvested.

In addition to flue-cured tobacco, the area also has some highly localized production of cigar wrapper tobacco. Farming is quite diversified. Many farms are of small size, and sizable amounts of land are in forest for pulpwood and naval stores.

FLUE-CURED TOBACCO PRODUCTION AREAS

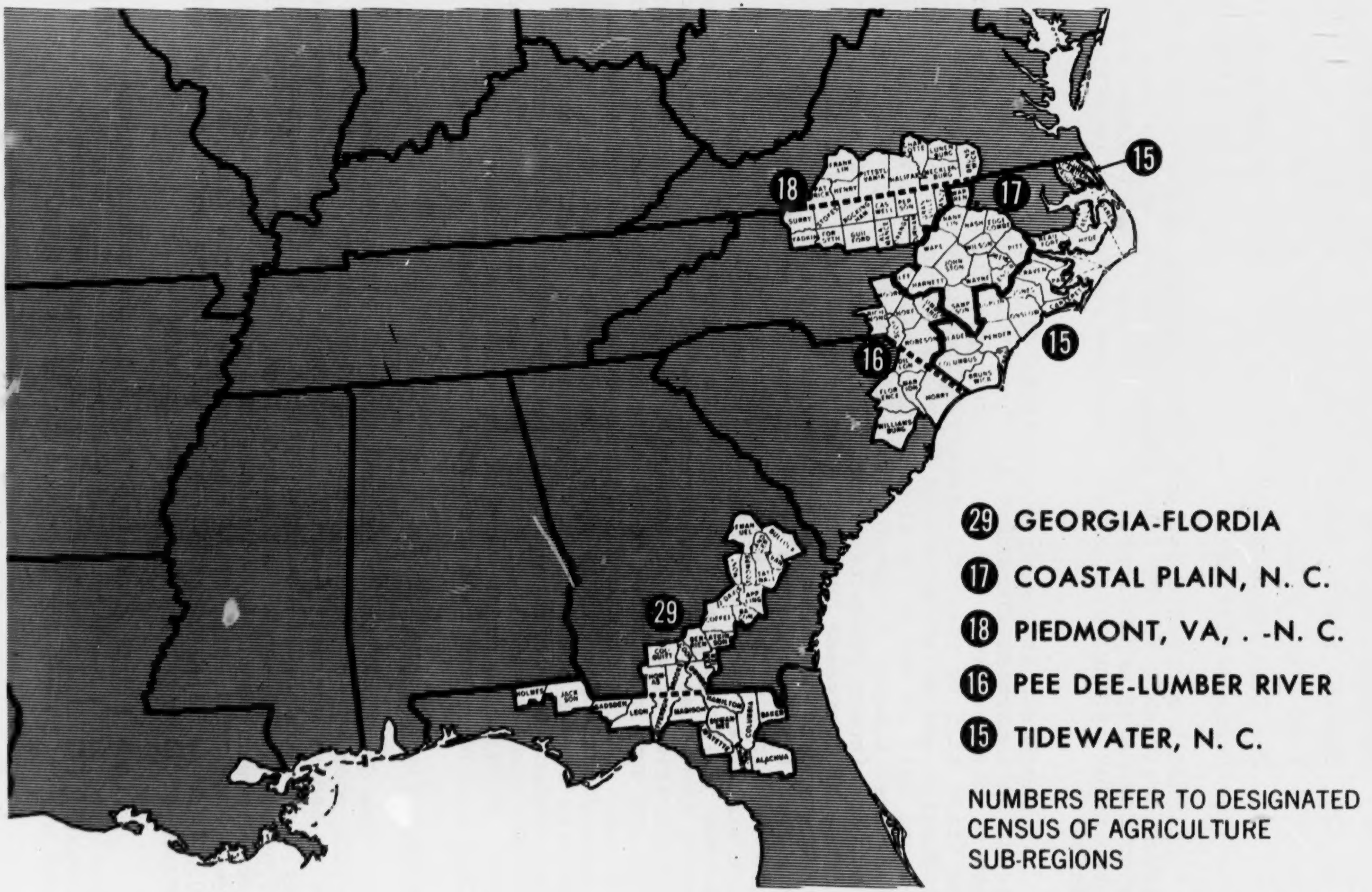
18
17
15
16
15
29
29 GEORGIA-FLORDIA
17 COASTAL PLAIN, N. C.
18 PIEDMONT, VA, . -N. C.
16 PEE DEE-LUMBER RIVER
15 TIDEWATER, N. C.
NUMBERS REFER TO DESIGNATED CENSUS OF AGRICULTURE SUB-REGIONS

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Figure 1

Coastal Plain, N.C.

The Coastal Plain of North Carolina is the most concentrated area of flue-cured tobacco production in the country. About 164,000 acres yielded 376 million pounds of this crop in 1964. The area is ideally situated with regard to soil, climate, and labor supply for intensive cultivation of flue-cured, brightleaf tobacco. The Coastal Plain is abundantly supplied with level fields of light, sandy soils having sandy-clay subsoils. These soils warm early, are readily worked, and produce the highest quality of leaf. Throughout most of the area, commercial cultivation of tobacco did not begin until the 1890's. Once established, it supplanted cotton as a principal source of farm income and now accounts for about three-fourths of all farm sales. The fact that acreage controls (without poundage restrictions) on tobacco have been in effect for a period of years has fostered an intensive type of cultivation which has considerably increased yields and raised the labor input per acre. These same factors of restricted acreage and intensive cultivation encouraged and prolonged use of animal power. However, today most commercial farmers have tractors.[1]

Piedmont, Va.-N.C.

This production area is the Nation's oldest growing belt for brightleaf, flue-cured tobacco. The area is the second most important producer of the leaf and is the center of the cigarette manufacturing industry. In 1964, the area had about 142,000 acres in flue-cured tobacco and harvested 292 million pounds. Unlike the Georgia-Florida area and the Coastal Plain of North Carolina, the Piedmont area has uneven terrain, varying from undulating to hilly, with mountainous portions on the west. Tobacco is grown mostly on light-textured soils of fine, sandy loam. About three-fourths of the land is in farms, a higher proportion than in the cotton Piedmont to the South. Most farms in the area are tobacco farms, and the average size is small. Allotment per farm in 1968 was 3.25 acres. The tobacco fields are small, irregularly shaped, and often on hilly ground. Yields are not as high as in the North Carolina Coastal Plain area. Half the farmland remains in woods, most of these unpastured.

Pee Dee-Lumber River

The Pee Dee and Lumber River area, State parts N.C. 16 and S.C. 16, also made the transition from cotton to tobacco.[2] Cotton is still grown in the area, but tobacco is the leading cash crop. The area is located in the drainage basin of the lower Pee Dee River and its tributary, the Lumber River. Most of the area is in the Coastal Plain, but a few tobacco-producing counties of the North Carolina Sand Hills are also included. In 1964, about 167 million pounds of flue-cured tobacco were harvested from 82,000 acres. Farmland is interspersed with large acreages of swamp or other poorly drained land. In the Sand Hills portion, much of the land is suitable only for forestry or nonagricultural uses, and about half the land is not in farms.

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[1] See page 30 for definition of commercial farms.

[2] "State part" refers to that portion of a Census subregion contained within 1 State.

Tidewater, N.C.

The Tidewater area of North Carolina is generally heavily wooded and flat. About 70 percent is forested, much of which is in swamps. Less than half the land is in farms, because of extensive belts of swamps, marsh, and sand. Agriculture is the most common industry, although it does not employ as high a proportion of the population as do the intensive tobacco and peanut areas to the west. Principal crops are flue-cured tobacco, cotton, corn, soybeans, and peanuts. Soils vary from black loams to white sands. The well-drained, light, sandy loams are best suited for tobacco, cotton, peanuts, sweetpotatoes, and early truck crops. In 1964, about 137 million pounds of flue-cured tobacco were harvested from 65,600 acres in the Tidewater area.

Magnitude of Tobacco Production in the Study Area

Flue-cured tobacco production in the United States totaled 1.4 billion pounds in 1964. Nearly all of this production was in the five Southeastern States of Virginia, North and South Carolina, Georgia, and Florida. About 80 percent of the acreage and 76 percent of the total production was in the five areas delineated above.

II. INSTITUTIONAL, TECHNOLOGICAL, AND DEMAND FACTORS AFFECTING THE FLUE-CURED TOBACCO INDUSTRY

The effects of Government programs, changing technology, and changes in consumer demand on the flue-cured tobacco industry cannot be neatly isolated. Indeed, they are highly interrelated. To the extent possible we will discuss these several factors separately in the section which follows, but with only a minimum of attention to demand.

Government Programs

Few agricultural enterprises are as regulated as the flue-cured tobacco industry. Government programs, in addition to restricting acreage, have placed restrictions on production beginning in 1965 and, until 1968, on form (tied or untied) of sale. These programs were initiated, and have been maintained, in an effort to provide a balance between supply and anticipated demand for tobacco while retaining price levels that would provide adequate returns to production resources.

Government programs have been and are currently an important influence on the structure (including size, number, and location of production units; technology employed; and labor use) of the tobacco industry. In particular, they have affected the organization of production units and, though perhaps to a lesser extent, marketing and processing institutions.

The small size of production units resulting from these programs has deterred extensive mechanization of production. Few farmers have been able to amass enough tobacco acreage to economically justify owning expensive, specialized tobacco equipment. Even with the rigidities of Government programs, however, some new technology has been adopted. Yet, much of the laborsaving technology developed in recent years will not be extensively adopted without such institutional changes as program modifications and alteration of tobacco buying practices and without some changes in long-standing customs in the tobacco trade.

Current Program Features

Major features of the current flue-cured tobacco programs are provisions for acreage-poundage quotas, price support, sale of untied tobacco, and lease and transfer of quotas.

Acreage-poundage quotas were approved by growers in 1965 for the 1965, 1966, and 1967 crops in lieu of the acreage allotment system in effect at that time. In 1967, flue-cured tobacco growers approved acreage-poundage quotas for the 1968, 1969, and 1970 crops. The acreage-poundage program provides for acreage allotments and poundage quotas for individual farms producing flue-cured tobacco. Such individual allotments and quotas are derived from the national poundage quota and acreage allotment determined by the Secretary of Agriculture. A farmer may produce and sell, in any one year, up to 110 percent of his poundage quota. The amount sold in excess of his quota is deducted from his quota in the following year. If he sells less than his quota, the quantity undermarketed is added to his quota in the following year.

The price support program for flue-cured tobacco establishes minimum prices for each grade of tobacco. Buyers must pay at least 1 cent per pound above the support price to acquire a given lot of tobacco. If such a price is not bid, the grower receives the support price, and the tobacco passes into the hands of the Flue-Cured Tobacco Cooperative Stabilization Corporation. This is a producer organization that handles, processes, stores, and offers for resale flue-cured tobacco acquired under the price support program. Flue-cured tobacco received by the Stabilization Corporation has ranged from 4.2 to 22.6 percent of net sales in the marketing seasons since 1960. In 1968, about 13 percent of the marketings were taken by this organization. The price support level for flue-cured tobacco in a given year is based on the relationship between the average parity index for the immediately previous 3 years and the index for 1959. The percentage difference in this index is applied to the 1959 support level to yield the support level for the given year.

Price support is available only on tobacco produced in accordance with the provisions of the current program. Until 1963, except in Georgia and Florida, only tobacco marketed in tied form was eligible for price support. In Georgia and Florida, tobacco has historically been sold in untied form and was eligible for price support. In 1963-67, untied tobacco was eligible for price support in South Carolina, North Carolina, and Virginia during a specified period at the beginning of the marketing season. In 1968, both tied and untied tobacco were eligible for price support throughout the marketing season on all flue-cured tobacco markets. Sales of untied tobacco accounted for 99 percent of flue-cured sales in 1968.

The lease and transfer provision for flue-cured tobacco became part of the program in 1962. In general, this provision allows a farmer to produce tobacco leased from another farmer on an annual basis on land other than that to which the quota is originally assigned. More specifically, the quota thus leased is restricted to movement within county boundaries, and the total acreage of tobacco allotted to any farm after the transfer cannot exceed 50 percent of the recipient farm's total cropland. In crop years before 1968, the maximum allotment that could be leased and transferred was 5 acres.

Effect of Programs on Production Units

Chiefly because of substantial increases in yield per acre, attempts to control flue-cured tobacco production by acreage allotments have resulted in a sharp reduction since World War II in the average flue-cured tobacco allotment (fig. 2). In 1965, a cut of nearly 20 percent was announced for acreage allotments then in effect. The advent of the acreage-poundage program in 1965 restored all but 5 percent of the announced reduction. Of course, the larger acreage allotment was accompanied by the poundage quota. The basic national acreage allotment and poundage quota have been substantially the same each year since the inception of acreage-poundage in 1965, and the average acreage allotment per farm has leveled off at about 3.1 acres. However, basic allotments and poundage quotas for individual farms are adjusted each year to reflect the farms' overmarketing or undermarketing, as the case may be, to get effective quotas.

Allotment size is not necessarily a measure of the tobacco acreage grown by any one producer, since allotments are sometimes combined

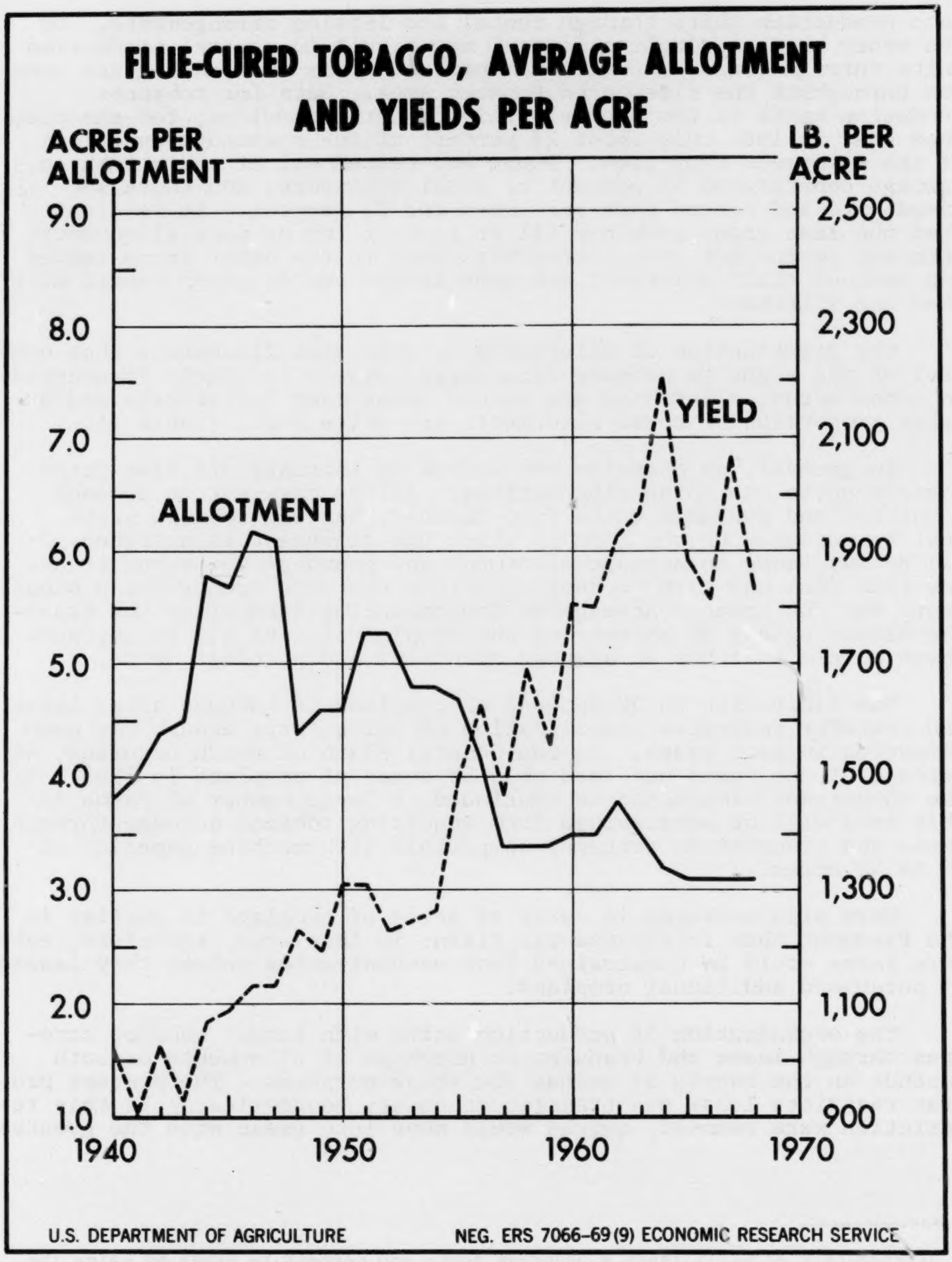
FLUE-CURED TOBACCO, AVERAGE ALLOTMENT AND YIELDS PER ACRE
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Figure 2

into production units through rental and leasing arrangements. On the other hand, a single allotment may result in several production units through these same arrangements. Renting and leasing are common throughout the flue-cured tobacco area. Data for tobacco-producing units in the Coastal Plain of North Carolina, for example, show that in 1964 only about 27 percent of the operators owned all of the allotment they grew. Those who rented all of their tobacco acreage constituted 52 percent of total operators, and those who owned part and rented part accounted for 21 percent. It is clear that the last group combined all or part of two or more allotments into one production unit. Possibly, some in the owner group rented out part of their allotment and some in the renter group rented more than one allotment.

The distribution of allotments by size does illustrate that control of the right to produce flue-cured tobacco is widely fragmented. In other words, allotments are spread among many individuals and a large proportion of these allotments are quite small (table 1).

In general, an operator who wishes to increase his flue-cured tobacco quota has three alternatives: (1) He may rent an acreage allotment and poundage quota from another, but the tobacco grown must be produced on the farm to which the allotment is assigned;3/ (2) he may lease an acreage allotment and poundage quota and transfer them from one farm to another within the same county for a single year, but the tobacco acreage on the producing farm after the transfer cannot exceed 50 percent of the cropland;4/ and (3) he may purchase a farm that has an acreage allotment and poundage quota.

The limitation to 50 percent of cropland in tobacco after lease and transfer restricts consolidation of units large enough for mechanization in many cases. In the Coastal Plain of North Carolina, 44 percent of the farms had less than 50 acres of cropland in 1968. If the 50-percent limitation is continued, a large number of farms in this area will be constrained from acquiring tobacco acreage through lease and transfer in acreages compatible with machine capacity of 30 to 40 acres.

Farm size measured in terms of acres of cropland is smaller in the Piedmont than in the Coastal Plain; in that area, therefore, even more farms would be constrained from mechanization unless they leased or purchased additional cropland.

The organization of production units with larger tobacco acreages through lease and transfer or purchase of allotments or both depends on the supply of quotas for these purposes. The present program restricts lease and transfer to county boundaries.5/ If this restriction were removed, quotas would move into areas with the greatest

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3/ Producers actually lease a poundage quota and convert to acres by using the yield on the receiving farm.

4/ Provisions are made for moving the allotment if the entire farm is rented.

5/ For discussion of experience with lease and transfer see Hoover, Dale M., "Lease and Transfer of Flue-Cured Tobacco Marketing Quota Among Farms," Econ. Inform. Rpt. No. 6, Dept. of Econ., N.C. State Univ., Dec. 1967.

Table 1.--Distribution of flue-cured tobacco allotments by size groups, 1968

Size of allotment	All farms	Percentage of all farms	Total allotment	Allotment per farm
	Number	Percent	Acres	Acres
Acres:				
Less than 2.00	92,260	47.5	94,622.69	1.03
2.01-4.00	60,177	31.0	169,425.67	2.82
4.01-6.00	20,364	10.5	98,950.70	4.86
6.01-8.00	9,018	4.6	62,017.65	6.88
8.01-10.00	4,497	2.3	40,050.35	8.91
10.01-20.00	6,290	3.2	84,197.69	13.38
20.01-50.00	1,583	.8	44,660.25	28.21
50.01-100.00	154	.1	9,813.42	63.72
Over 100.00	31	1/	4,021.05	129.71
Total	194,374	100.0	607,759.50	3.13

1/ Less than 0.1 percent.

competitive advantage in flue-cured production. Such movement would further enhance the possibilities for mechanization in areas such as the Coastal Plain.6/ It would also reduce economic activity and employment related to tobacco in the areas from which outmigration of quotas occurred.

Effect of Programs on Marketing and Processing

Most Federal flue-cured tobacco programs are directed toward the production stage. Several of these programs, however, have an indirect impact on tobacco marketing and processing. These are primarily programs relating to the form in which tobacco may be sold and the location of production operations.

With the extension of price support to untied flue-cured tobacco in production areas other than Georgia-Florida, much of the flue-cured leaf redrying capacity became unusable. Processors were required to convert their lines from bundle redrying to loose leaf redrying. This conversion was completed before the start of the 1968 processing season.

6/ An analysis of the effect of permitting allotments to be transferred across county boundaries appears in Bradford, G.L., and Toussaint, W.D., "Economic Effects of Transferable Tobacco Allotments," Agr. Econ. Inform. Series No. 89, Dept. of Agr. Econ., N.C. State College, 1962.

In terms of labor usage, the shift to loose leaf has eliminated some of the heavier manual work performed by male workers and increased the number of jobs for females in redrying plants. Bundle redrying machines are loaded and unloaded manually, while loose leaf machines are loaded and unloaded automatically. At the same time, the shift to loose leaf has increased the number of female workers required on inspection belts.

Current lease and transfer regulations, which prohibit the movement of tobacco allotments across county boundaries, have virtually no impact on the flue-cured tobacco marketing system. If these regulations were expended to allow movement of allotments across county boundaries into areas with the greatest comparative advantage, a significant impact on the structure of the tobacco auction warehouse system and the location of the warehouses could be expected. The movement of production would force the closing of tobacco auction warehouses in the losing area, with resultant loss of employment opportunities in these areas and increases in recipient areas.

Labor Use in Flue-Cured Tobacco

During 1967, 480 million man-hours of farm labor were used to produce the Nation's tobacco crop. About 295 million of these were required for the flue-cured crop alone. This is more than the total required to produce the Nation's cotton (242 million) or food grains (206 million) in that year.

The extremely high labor requirement for tobacco production is a factor limiting the size of production units. Even though the average 1964 flue-cured tobacco allotment was only 3.2 acres, the extremely high seasonal labor requirements that peak at harvesttime forced most tobacco farmers to hire labor. A 1964 survey of 906 tobacco farms (growing all types of tobacco) showed that 92 percent of the farms hired some labor.[7] Even those tobacco farms having sales of less than $5,000 were dependent upon hired labor, as shown below:

Farms by value of sale of products	Proportion hiring labor
	Percent
All farms	92
Farms having sales of--	
Less than $5,000	84
$5,000-$9,999	95
$10,000-$19,999	96
$20,000-$39,999	100
$40,000 and over	100

The average monthly labor demand per farm varied from less than 200 hours in January and February to more than 950 hours in August. Aggregate labor demand for all tobacco farms is shown in figure 3.

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[7] Farm Labor Inputs, 1964, Statis. Bul. 438, Econ. Res. Serv., U.S. Dept. Agr., 1969.

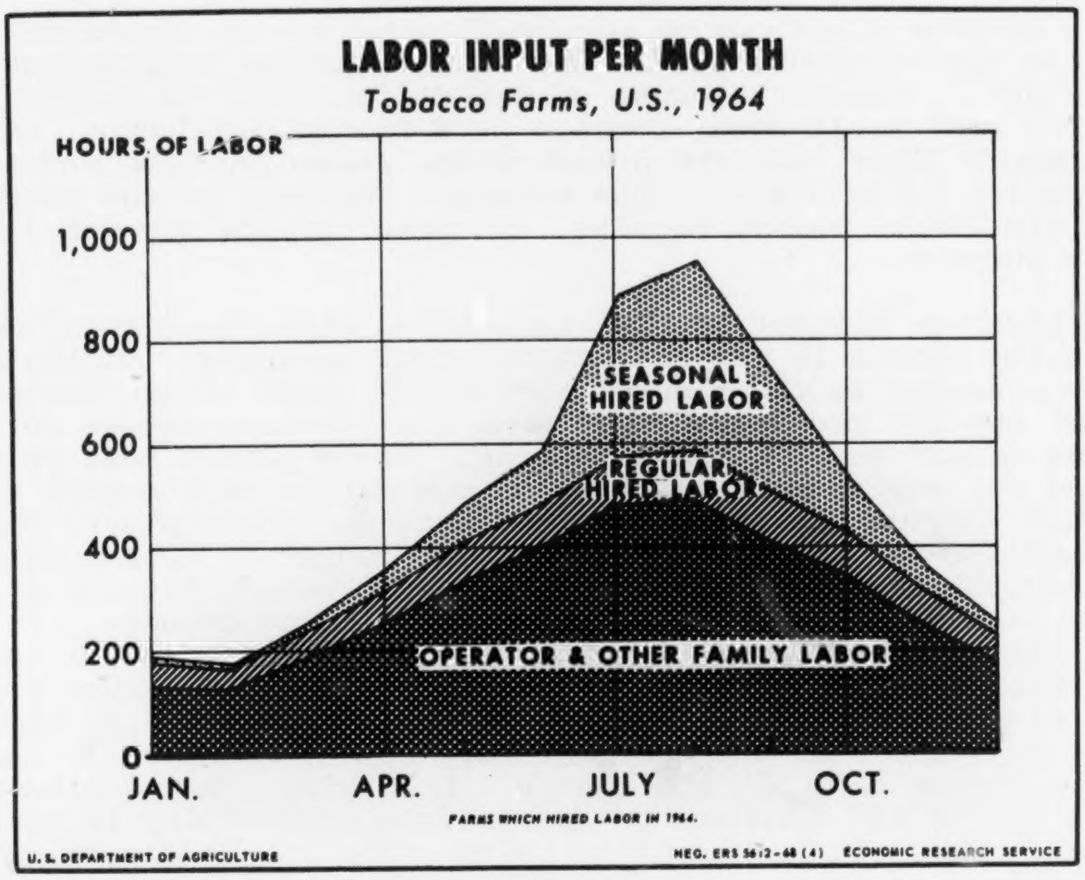

Figure 3

Availability of labor and management ability of individual operators have materially affected the organization and size of production units. These factors have no doubt been influential in the breaking-up of some large allotments by renting pieces out and organizing sharecropper units. However, if mechanization of tobacco production is to become a reality, substantial adjustments to increase the size of production units appear necessary.

Though substantive data on labor employment in tobacco markets are not available for the entire study area, an example can be provided. The thirteen tobacco markets operating in the North Carolina Piedmont in 1967 employed an estimated 1,918 persons on an hourly basis to set-up and break tobacco sales. Total man-hours of employment were estimated to be 658,662. In addition to the direct labor force involved, an unknown number of supervisory and clerical jobs would be lost by the North Carolina Piedmont if, for example, transfer of tobacco allotments across county lines were allowed and tobacco production shifted from the North Carolina Piedmont to the Coastal Plain area.

Mechanization of Production and Its Effects on Labor Use

The watchword for flue-cured tobacco technology today is mechanization. Manual labor requirements for the crop are relatively high and offer a fertile area for the replacement of man-labor with machines.

The tobacco plant, which may reach a height in excess of 6 feet, originates from a minute seed. One ounce contains some 400,000 to 600,000 seeds. Chiefly because of the difficulties of direct field-seeding of such small seed, tobacco is a transplanted crop. Flue-cured tobacco plant beds are prepared and seeded in late winter, and transplanting takes place in the spring. The soil of the plant bed must be sterilized before seeding, and most farmers now use chemicals for this purpose.

Perhaps the biggest problem associated with the current method of producing plants is variability in plant maturity. Variability stems from damage to the plant's root system when it is "pulled" from the plant bed for transplanting. Some root systems may be so damaged that they do not survive transplanting. These plants must be replaced later and the replacements usually do not mature at the same time as those that survive the initial transplanting. Other plants with less damage may survive transplanting but take longer to become established. Again, variability in maturity occurs. Such variability is a significant handicap in machine harvesting of flue-cured tobacco. Flue-cured tobacco plants mature over a period of 4 to 6 weeks. Basal leaves ripen first; maturity progresses upward, and the tip leaves are the last to ripen. Ideally, all plants in the field should be the same height and at the same stage of maturity so the machine can remove only ripe leaves from all the plants. Otherwise, the machine must be adjusted upward and downward to accommodate variability in maturity of leaves. Research is currently being conducted to determine the feasibility of producing potted plants to better ensure uniform plant size and maturity.

The transplanting operation for flue-cured tobacco is largely mechanized. Mechanical transplanters, one-row and some two-row machines, are widely used. These machines require manual placement of individual plants, either in the ground or in the machine, but substantially reduce labor requirements relative to requirements in hand-transplanting. Research is currently being conducted on a prototype automatic transplanter for use with potted plants.

Weed control in flue-cured tobacco is a combination of hand and machine operations. Much of the cultivation is done with tractors and one-row cultivators, but hand-hoeing of weeds is done when necessary. Chemicals are available for weed control but are not yet widely used.

Maleic Hydrazide (MH 30) is a plant growth control chemical widely used to control sucker growth in flue-cured tobacco. MH 30 has come into general use since the late 1950's. Some hand-suckering is usually necessary with MH 30, but if used properly, the chemical reduces labor requirements by as much as 14 hours per acre.

Total labor requirements for producing flue-cured tobacco vary among growers due to differences in managerial ability, production systems, yields, and perhaps other factors. Nationally, labor requirements for flue-cured tobacco were estimated to average 515 hours per acre in 1959. Of this total, 129 hours were for preharvest operations and 386 hours, or 75 percent of the total, were for harvesting and market preparation.8/ The estimate for 1959 reflects only partial

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8/ Labor Used to Produce Field Crops, Statis. Bul. No. 346, Econ. Res. Serv., U.S. Dept. Agr., May 1964.

replacement of horses and mules with tractor power. About 58 percent of commercial flue-cured tobacco farms reported tractors in 1959. In 1964, this figure was 69 percent. Since 1964, this ratio has no doubt become larger. Even so, adoption of tractor power has had more impact on preharvest than on harvest operations.

By 1967, total labor used per acre was down 9 percent to 471 hours in the aggregate, and over 61 million hours of work had been eliminated since 1959. Preharvest labor decreased to 98 hours per acre--down 24 percent from 1959 (table 2). In contrast, harvest labor requirements rose 6 percent. Harvest labor is largely a function of yield, and yield per acre increased 30 percent during the 8-year period. Labor used in preparing the crop for market declined 17 percent from 1959 but nonetheless averaged 127 hours per acre in 1967. This decrease was due primarily to the shift from tied to untied sale of tobacco. In 1967, about two-thirds of the crop was sold untied. In 1968, nearly all flue-cured tobacco was sold untied and thus labor needed to prepare the tobacco for market was reduced even further.

This uneven development of mechanization has heightened the farm labor problem by raising the peak harvest demand while eliminating many preharvest and postharvest jobs. Thus, hired workers have a shorter employment period, and many tobacco farmers find it difficult to obtain a reliable work force for such a short period. This problem may help explain why some farmers have not been quick to adopt new technology. They retain workers for employment during the peak period by providing pre- and post-harvest jobs that could be abolished by partial mechanization. For example, with current technology, preharvest labor could be reduced to an average of about 73 hours per acre.[9]

There are several different methods or systems for harvesting flue-cured tobacco. These systems may be classified under three major headings: (1) Hand harvest, (2) hand harvest with priming aids, and (3) mechanical harvest. The first two systems are in general use and the last in the introductory stage.[10]

A more complete classification of the first two systems is as follows:

Hand Harvest

A. Conventional barn
    1. Hand looping
    2. Automatic looping

B. Bulk barn

Hand Harvest With Priming Aid

A. Conventional barn
    1. Hand looping on the priming aid
    2. Hand looping at the barn
    3. Automatic looping

B. Bulk barn

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[9] A Cost and Returns Guide for Selected Field Crops in North Carolina, Cir. 462, N.C. Agr. Ext. Serv., Mar. 1965. Estimate is the total of preharvest labor from the table on page 23 of the Guide.

[10] Priming is the removal of ripe leaves from the stalks in the field.

Table 2.--Production and labor used, flue-cured tobacco, by States, 1959 and 1967

State	Acres harvested	Yield per acre	Labor used per acre				Total labor used			
			Pre-harvest	Harvest	Preparing for market	Total	Preharvest	Harvest	Preparing for market	Total
	Number	Pounds	Hours	Hours	Hours	Hours	Hours	Hours	Hours	Hours
	1959 1/									
Virginia	70,500	1,560	150	234	156	540	10,575,000	16,497,000	10,998,000	38,070,000
North Carolina	458,500	1,533	125	235	150	510	57,312,500	107,747,500	68,775,000	233,835,000
South Carolina	81,000	1,765	130	215	175	520	10,530,000	17,415,000	14,175,000	42,120,000
Georgia	69,000	1,520	130	231	150	511	8,970,000	15,939,000	10,350,000	35,259,000
Florida	13,900	1,395	125	238	140	503	1,737,500	3,308,200	1,946,000	6,991,700
Alabama	450	1,250	140	251	125	516	63,000	112,950	56,250	232,200
Total	693,350	1,559	129	232	153	514	89,188,000	161,019,650	106,300,250	356,507,900
	1967 2/									
Virginia	55,900	1,850	105	228	123	456	5,869,500	12,745,200	6,875,700	25,490,400
North Carolina	409,500	2,017	96	245	133	474	39,312,000	100,327,500	54,463,500	194,103,000
South Carolina	76,000	2,170	104	266	120	490	7,904,000	20,216,000	9,120,000	37,240,000
Georgia	72,000	2,040	98	250	105	453	7,056,000	18,000,000	7,560,000	32,616,000
Florida	12,900	1,975	98	242	101	441	1,264,200	3,121,800	1,302,900	5,688,900
Alabama	560	1,800	105	224	90	419	58,800	125,440	50,400	234,640
Total	626,860	2,022	98	246	127	471	61,464,500	154,535,940	79,372,500	295,372,940
Percentage change from 1959	-10	+30	-24	+6	-17	-8	-31	-4	-25	-17

1/ From Statistical Bulletin 346, U.S. Dept. Agr.
2/ Preliminary estimates prepared in Farm Prod. Econ. Div., Econ. Res. Serv., Jan. 1969.

Both methods involve "hand priming." In "hand harvesting," the primers walk down the rows removing ripe leaves as they go.

A priming aid is any of several riding units that carry the workers (primers) down the rows in close proximity to the plants and allow the workers to remove leaves while seated. Priming aids may be self-propelled or tractor-drawn. Some aids carry only primers, while others also carry the looping crew. The looping crew ties leaves onto sticks to be hung in curing barns. The effect of use of priming aids on labor requirements probably varies greatly. Some growers claim laborsavings while others say use of priming aids only makes working conditions more comfortable. A study of one type of self-propelled priming aid indicated savings in harvest labor of 25 percent compared with labor required in conventional harvesting operations.11/

The automatic looper, or tying machine, is used in conjunction with conventional barns. Chappell and Toussaint estimate that use of tying machines requires 49.5 hours less labor per acre than hand-tying.12/ The investment cost for a tying machine is around $1,600.

Use of bulk-curing barns eliminates the need for tying leaves onto sticks and thereby reduces labor requirements for barning and removing leaves from sticks after curing. Chappell and Toussaint estimate a savings of around 120 hours per acre for a bulk-curing system compared with a system of conventional barns and hand-tying. This savings includes 5 hours per acre in watching the cure. Investment cost for a bulk barn with a 3-acre capacity is around $4,000. At present wage rates and when each system is used at capacity, the harvesting system utilizing automatic loopers is the least costly compared with conventional (hand-tying) and bulk-barn systems. Since the bulk-barn system promises the greatest laborsavings, it becomes more competitive with other systems as wage rates increase. When wages are increased 50 percent above the 1967 level of about 90 cents per hour, the bulk system (with hand-harvest) becomes less costly than the conventional system. Though the cost still does not decline enough to equal that for the tying machine system, the difference in total cost for the two systems is reduced.13/

The overall effect of the adoption of bulk-curing and tying-machine systems on labor used in flue-cured tobacco production is not presently known. Limited information indicates that the number of

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11/ Toussaint, W.D., and Harwood, D.G., Machine or Hand Harvesting Tobacco, Ext. Cir. No. 413, N.C. Agr. Ext. Serv., May 1957.

12/ Chappell, J.S., and Toussaint, W.D., Harvesting and Curing Flue-Cured Tobacco With Automatic Tying Machines, Bulk Curing and the Conventional Method: Labor Requirements, Costs and Prices Received, Agr. Econ. Inform. Series No. 123, Dept. of Econ., N.C. State Univ., Aug. 1965.

13/ Chappell and Toussaint, ibid., page 17 ff. Capacity for bulk-barn and conventional systems is 3 acres and for tying machine, 25 acres. These cost comparisons are based on the assumption of purchasing all new equipment and do not consider the replacement of existing barns with bulk barns. The authors point out that the difference is overhead costs between bulk- and conventional barns would be greater if such replacement is considered.

bulk units and tying machines on farms has increased (probably only moderately) in recent years. On the other hand, an almost complete changeover has occurred in the form in which flue-cured tobacco is sold. This changeover--to untied form--has substantially reduced the amount of labor used in flue-cured production. Labor requirements for preparing flue-cured tobacco for market in tied form are estimated to exceed requirements for untied preparation by about 4 hours per 100 pounds.[14] As previously mentioned, untied sales accounted for 99 percent of marketings in 1968, up from 24 percent in 1965. The yield in 1968 for flue-cured tobacco is estimated at 1,940 pounds per acre. Selling in untied form, therefore, reduced labor requirements for the 1968 crop by about 77 hours per acre compared with selling in tied form.

The dramatic shift to sales of untied tobacco has had an impact on labor requirements. However, this shift has implications beyond savings in labor used for market preparation. Selling flue-cured tobacco in untied form is an integral part of the mechanical harvesting system. The mechanical tobacco harvester, currently in extremely limited use, removes the leaves from the tobacco stalk mechanically and conveys them to a location on the machine where they can be "racked" before they are transferred into a bulk-curing barn. It has been estimated that this system reduces labor requirements for harvesting and market preparation by almost 70 percent compared with the conventional method.[15] The efficiency of this machine depends largely on the leaves being racked, cured, and marketed in the random order in which they are conveyed to the racking location. Reordering the leaves by hand before racking or marketing offsets much of the labor savings. Although the shift to sale of untied tobacco was virtually complete in 1968 and appeared acceptable to the trade,[16] there is still some doubt about whether buyer's will accept mechanically harvested tobacco. This doubt exists because of problems associated with grading tobacco cured and sold in random order. However, relatively little leaf has been cured in this manner; and doubt was also expressed about the acceptability of any bulk-cured tobacco when bulk units first appeared. Moreover, much of the objection to random order leaf may be related to its inadaptability to the stemming operation of processing plants. This problem is perhaps no more serious for random leaf than for the oriented untied leaf. Widespread adoption of threshing plants to handle untied leaf should eliminate any serious problems associated with processing random leaf.

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[14] Brooks, R. Charles, and Toussaint, W.D., "Labor Requirements In the Market Preparation of Flue-Cured Tobacco," Agr. Econ. Inform. Series No. 98, Dept. of Agr. Econ., N.C. State College, Feb. 1963.

[15] Bradford, G.L., "Effects of Changing Wages on the Profitability of Harvesting and Market Preparation Systems and on the Structure of Tobacco Farms," Tobacco Mechanization and Marketing, Agr. Policy Institute Series 29, School of Agr. and Life Science, N.C. State Univ., Feb. 1968.

[16] Chappell and Toussaint found no statistically significant price differences between tobacco cured conventionally and in bulk. "Harvesting and Curing Flue-Cured Tobacco With Automatic Tying Machines, Bulk Curing and the Conventional Method: Labor Requirements, Costs and Prices Received," op. cit.

A comparison by Bradford of production costs for conventional, automatic looper, bulk, and mechanical harvester systems shows the automatic looper system to have the lowest cost, using 1967 wage rates and with each system used at capacity.17/ Capacities of the various systems are: 3 acres for a conventional barn, 25 acres for automatic looper, 3 acres for a bulk-curing barn, and 40 acres for mechanical harvester. At wage rates of $1.35 per hour (50 percent higher than the 1967 level of about 90 cents), Bradford's comparison shows the mechanical harvester system to have the lowest production costs. Higher wage rates of this magnitude or greater are probable in the near future. Unpublished Economic Research Service data for the Coastal Plain of North Carolina indicate that at an annual use of 32 acres per year, wage rates would need to exceed $1.83 per hour for a mechanical harvesting system, at current costs, to be the most profitable system for tobacco harvesting.

Thus, as wage rates increase, most of the obstacles to the adoption of the mechanical harvesting system are those related to organizing production units of a size compatible with efficient use (use at or near capacity) of the mechanical harvester. As previously indicated, relatively few production units in flue-cured tobacco have as many as 40 acres of tobacco.

Substantial initial investment is needed to organize a unit having 40 acres of tobacco through any of the rental, lease and transfer, or farm purchase alternatives currently available. Capital requirements are greater, of course, if farmland is purchased. However, ownership reduces the uncertainty that accompanies the other alternatives. Initial investment for machinery and equipment is estimated to be around $52,000, including $12,000 for the mechanical harvester and $40,000 for the necessary number of bulk barns.

The amount of capital necessary to purchase enough farmland to acquire 40 acres of tobacco under current institutional arrangements would vary, depending on the percentage of total land in cropland, soil type, topography, buildings, and other factors. Contribution of the value of the allotment itself to total cost would be substantial. Bradford estimated the capital requirement for a hypothetical, large flue-cured tobacco farm in the Coastal Plain of North Carolina, with the allotment itself valued at $2,500 per acre. Investment in land for this farm, having 500 acres of land, 250 acres of cropland, and 40 acres of tobacco allotment, is estimated to be $175,000.18/ Both the total land required to produce 40 acres of tobacco and the cost of this land could be appreciably reduced if institutional arrangements were modified.

The wage rate is critical to the determination of the most profitable harvesting system. As mentioned above, mechanical harvesting is the least costly system compared with other systems in common use, with wage rates at 150 percent of the 1967 level and with the harvester used at full capacity. At higher wage rates, cost comparisons would be even more favorable to the mechanical system, and its use at less than capacity could become profitable. These cost comparisons

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17/ Bradford, G.L., Effects of Changing Wages on the Profitability of Harvesting and Market Preparation System and on the Structure of Tobacco Farms, from Proceedings of the Agr. Policy Institute Conf., API Series 20, Feb. 1968.

18/ Ibid.

are based on purchase of all components of each system. However, since most producers already have adequate conventional facilities, cost comparisons within the current, actual situation would be somewhat less favorable for the mechanical harvester than those shown. Of course, facilities do not last forever and must eventually be replaced. Some combination of conventional barns and bulk barns might be used in moving from a conventional to a mechanical system. Equipment is available for converting conventional barns into bulk barns at a cost somewhat less than for constructing new bulk-barn units.

Possible Adoption and Effects of Mechanical Harvesting

One thing seems clear; if the use of mechanical harvesters is to become widespread in the near future, the harvesters must be used at or near capacity. Such usage might be accomplished through custom-hiring and joint ownership of machines or, of course, by consolidating small production units into larger ones. Some insight into the adjustments necessary for consolidation may be gained by looking at the size of production units currently existing.

The Coastal Plain of North Carolina is the area currently best suited to mechanization of tobacco. The topography is generally level and conducive to the use of large machines. Allotments in this area are generally larger than in most other flue-cured areas.

Production units in the Coastal Plain averaged 8.9 acres of tobacco per farm in 1968 (table 3), whereas the average acreage allotment was 4.5 acres (table 4). About 63 percent of the tobacco acreage on the average production unit was rented from other producers. Multiple-unit farms (farms with one or more sharecroppers) constituted 16 percent of total farms. These multiple units averaged 19 acres of tobacco per farm, compared with 7 acres for single units.

Tobacco production units ranged from an average of 1.4 acres on farms with less than 10 acres of cropland to 32.4 acres on farms with 220 or more acres of cropland. The most common interval in farm

Table 3.--Flue-cured tobacco acreage by farm size and type of farm unit, Coastal Plain, North Carolina, 1968

Item	All farms	Farm size (acres of cropland)					Type of farm unit	
		Less than 10	10-49	50-99	100-219	220 and over	Single	Multiple
Percentage of farms	100	6	38	30	20	6	84	16
Acres per farm	8.9	1.4	4.2	8.1	14.5	32.4	7.0	19.0
Percentage of acreage rented 1/	63	88	69	65	63	52	72	46

1/ Allotment rented from other producers.

Table 4.--Distribution of flue-cured tobacco allotments by size groups, Coastal Plains, North Carolina, 1968

Size of allotment	All farms	Percentage of all farms	Total allotment	Allotment per farm
	Number	Percent	Acres	Acres
Acres:				
Less than 2.00	11,703	30.4	13,017.58	1.11
2.01-4.00	13,252	34.5	37,954.74	2.86
4.01-6.00	5,750	15.0	28,048.34	4.88
6.01-8.00	2,886	7.5	19,903.78	6.90
8.01-10.00	1,553	4.0	13,862.21	8.93
10.01-20.00	2,444	6.4	33,015.05	13.51
20.01-50.00	732	1.9	20,780.46	28.39
50.01-100.00	86	.2	5,397.19	62.76
Over 100.00	21	.1	2,703.90	128.76
Total	38,427	100.0	174,683.25	4.55

size was 10-49 acres of cropland with 4.2 acres of tobacco. Farms with 220 acres or more and averaging 32.4 acres of tobacco accounted for only about 6 percent of the total number of production units. However, these larger farms produced a much higher percentage of the area's tobacco.

The Piedmont area of Virginia-North Carolina is an area where mechanization of tobacco is somewhat less feasible than in the Coastal Plain. Topography here is rolling, presenting difficult engineering problems, and fields of tillable land are small. The average allotment in 1968 was 3.2 acres (table 5). Data on a production unit basis, such as are presented for the Coastal Plain, are not available for the Piedmont area.

Farms reporting flue-cured tobacco in the Piedmont, in the 1964 Census, are distributed by acreage of tobacco harvested in table 6. Other than the time period difference, the major difference in the Piedmont data compared with the Coastal Plain data is that sharecropper units appear as farms for the Piedmont (table 6) but are included as parts of multiple-unit farms for the Coastal Plain (table 3). Therefore, comparable tables for the two areas could not be constructed.

Farms reporting flue-cured tobacco in the Piedmont averaged 4.5 acres of tobacco. About 54 percent reported 4 acres or less and only about 5 percent had more than 10.0 acres. Analysis of a sample of 1964 Census questionnaires for the Piedmont indicated that sharecroppers accounted for about 22 percent of the farms reporting

Table 5.--Distribution of flue-cured tobacco allotments by size groups, Piedmont, North Carolina and Virginia, 1968

Size of allotment	All farms	Percentage of all farms	Total allotment	Allotment per farm
	Number	Percent	Acres	Acres
Acres:				
Less than 2.00	17,922	40.1	19,650.84	1.10
2.01-4.00	15,974	35.7	45,779.55	2.87
4.01-6.00	5,826	13.0	28,312.44	4.86
6.01-8.00	2,333	5.2	15,977.70	6.85
8.01-10.00	1,082	2.4	9,627.71	8.90
10.01-20.00	1,290	2.9	16,935.53	13.13
20.01-50.00	254	.6	7,150.15	28.15
Over 50.00	23	1/	1,637.40	71.19
Total	44,704	100.0	145,071.32	3.25

1/ Less than 0.1 percent.

Table 6.--Percentage distribution of farms reporting flue-cured tobacco by acres of flue-cured tobacco harvested, Piedmont, North Carolina and Virginia, 1964

Acres harvested	Midpoint of range	Percentage of farms reporting
	Acres	Percent
Less than 2.00	1.00	18.9
2.01-4.00	3.00	35.1
4.01-6.00	5.00	24.7
6.01-8.00	7.00	11.0
8.01-10.00	9.00	5.3
10.01-20.00	15.00	4.5
20.01-30.00	25.00	.4
30.01-40.00	35.00	1/
Total	---	100.0
Average per farm	4.5	---

1/ Less than 0.1 percent.

Source: Special tabulation of a sample of tobacco questionnaires from the U.S. Census of Agriculture.

tobacco.[19] The estimated acreage of tobacco per production unit after adjusting for the proportion of sharecroppers was 5.8 acres for the Piedmont, or about two-thirds the size of production units in the Coastal Plain.

It seems obvious with the tobacco units that currently exist in the Coastal Plain and Piedmont that sizable adjustment would be necessary to develop production units of a size approaching the capacity of a mechanical harvester. Moreover, this generalization is probably equally valid for the other three production areas in the flue-cured belt.

The potential for substantial reduction in labor requirements for harvesting flue-cured tobacco exists today. However, adoption of the mechanical harvesting system at the level that would produce this reduction seems unlikely within the next several years.

Capital requirements associated with adoption of the mechanical harvesting system are substantial. Cost comparisons favor mechanical harvesting as wage rates increase. However, the required replacement of adequate conventional curing facilities with bulk units reduces the cost advantage of laborsavings.

On the other hand, there are forces in the environment that tend to favor adoption of the mechanized system. Increasing wage rates and doubt about the future availability of workers to meet the high seasonal peak demand for harvest labor are perhaps the most important factors.

Social action such as expansion of coverage of workers and increasing the minimum wage under the Fair Labor Standards Act, and the proposal for coverage of agricultural workers under the National Labor Relations Act, suggests that the cost of labor will be materially increased. If, in addition, barriers to organizing larger production units were removed, we could expect modest adoption of the mechanical harvester by 1972 and reasonably full adoption by 1975. Such a system would reduce labor input by about half from 471 hours per acre in 1967 to an estimated 246 hours in 1975 (table 7). The peak harvest demand for labor would be more than halved, and output per hour doubled. Removal of such barriers is, of course, a "big if," and one which cannot be predicted.

Effects of Mechanical Harvesting on the Work Force

A shift from hand to mechanical harvesting would, in addition to reducing the demand for labor, alter the skills demanded. Historically, there has been a great need for people with a high degree of dexterity to prime and tie tobacco. With mechanical harvesting comes the need for skilled harvester operators and for tractor operators and handlers able to use chain or electric hoists. The mechanical harvesting system will, in all probability, require a male crew. In contrast, hand harvesting systems use both male and female workers--the males prime and the females tie (table 8).

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[19] The 1964 Census did not classify sharecroppers separately from tenants. This estimate was made from a sample of questionnaires and was largely based on judgment resulting from knowledge of size and organization characteristics of sharecropper units.

Table 7.--Labor requirements per acre for flue-cured tobacco, 1939, 1959, and 1967, and projections to 1970 and 1975

Year	Hours of labor per acre			Yield per acre	Pounds produced per hour
	Preharvest	Harvest	Total		
	Hours	Hours	Hours	Pounds	Pounds
1939	171	283	454	802	1.77
1959	129	386	515	1,559	3.03
1967	98	373	471	2,023	4.30
1970 1/	95	275	370	2/2,084	5.63
1975 3/	73	173	246	2/2,084	8.47

1/ Based upon partial adoption of technology available in 1968.
2/ Quotas set on yield goal of 2,084 pounds per acre.
3/ Based upon complete adoption of technology available in 1968.

Loading and unloading of bulk barns is heavy work. A rack of green tobacco averages about 100 pounds. When cured, it will weigh about 15 pounds. The rack alone weighs about 15 pounds. Thus, the work is not suited for women because it involves lifting and pushing of heavy racks of tobacco at heights up to 6 feet. It is expected, therefore, that unloading bulk barns and preparing tobacco for market will be performed by male workers.

The traditional seasonal employment opportunities in tobacco harvesting that many female workers count on to bolster family income would not be available under mechanical harvesting. Thus, total income for a number of families would be reduced.

Mechanization of Tobacco Marketing

Auction sales--the conventional method of handling tobacco on the auction sales floor--are almost entirely a manual operation. In setting up for a sale, the sheeted tobacco piles are manually unloaded from the farm vehicle. Each pile is weighed, placed on a basket, and transported by hand truck to the sales floor. The piles are lined up in rows to be graded and sold.

After a sale is completed, the piles of tobacco are removed from the sales floor by hand truck and transported to a designated loading area. They are then loaded onto the buyer's truck by hand for hauling to the buyer's processing or green prizing plant.

Mechanical aids were employed to a limited extent in North Carolina in 1968 in setting up auction sales. No precise data on labor requirements are available, but agricultural engineers who developed the system estimate that labor requirements may be less than half that for the conventional method of setting-up sales. Also, the work is easier when mechanical aids are used.

Table 8.--Crew size and sex composition for harvesting flue-cured tobacco, North Carolina, 1967

Type of harvest	Number of workers in crew	Sex composition of crew
Hand harvest, tied tobacco:		
Primers	6-8	male
Tractor drivers	2	male
Tiers	5	female
Barn help	1	male
Total	14-16	
Hand harvest, automatic looper:		
Primers	6-8	male
Tractor drivers	2	male
Looper operators	3	female
Barn help	1	male
Total	12-14	
Hand harvest, bulk curing:		
Primers	6-8	male
Tractor drivers	2	male
Barn loaders	2	male
Total	10-12	
Mechanical harvest, bulk curing:		
Machine operators	2-3	male
Tractor drivers	2	male
Barn loaders	1	male
Total	5-6	

Source: Adapted from Bradford, G.L., Effects of Changing Wages on the Profitability of Harvest and Market Preparation Systems and on the Structure of Tobacco Farms, and from Splinter, W.E., Engineering Developments in Harvesting and Market Preparation Systems, North Carolina State Univ., Agr. Policy Institute, Series No. 29, Feb. 1968.

With the use of mechanical aids to set up the tobacco sale, chain hoists, roller conveyers, and fork lift trucks replace a major portion of the manual labor required under the conventional method. The sheeted tobacco is unloaded from the farm truck by a chain hoist, placed on a basket, and conveyed to the scale. After weighing, the pile is pushed down an inclined section of roller conveyer onto a section of conveyer mounted on the fork of a mechanical lift truck. This gives the lift truck the capacity of three piles of tobacco. The lift truck transports and deposits the three piles into the proper position on the sale floor. Two or three mechanical fork lifts operate in conjuntion with one chain hoist.

A further laborsaving is portended by the development of an experimental mechanical warehouse which has been used on a pilot scale. With this system, sheeted tobacco is unloaded from the farm truck and placed on an inclined roller conveyer, which conveys it across a scale for automatic weighing. In a truly commercial operation, several spur conveyer lines would be used for unloading. Thus, several farmers could unload their tobacco simultaneously. From the weighing station the tobacco moves, by conveyer, through a lighted grading room in which Federal graders determine the grade of each pile of tobacco. The tobacco continues by conveyer into a modern sales room where the buyers are stationed. Sales are conducted as the tobacco moves past. From the sales room, the tobacco is conveyed onto a spur which delivers it to the appropriate loading dock area. Each buying company is assigned a specific dock area. The experimental automated sales warehouse has not reached a stage of development which would permit one to estimate labor requirements and productivity. It can be expected, however, that the adoption of this system would significantly reduce the amount of physical labor required to move a given quantity of tobacco through the auction sales system.

It will probably be several years before the completely mechanical sales warehouse is commercially feasible. This timespan is necessary both because of resistance to major changes in the manner of doing things and because more developmental work on the system will be required before it is fully operational.

The use of mechanical aids in setting-up the conventional sale will be quite common in the 1969 marketing season, and full implementation of these innovations can be expected by the 1970 season.

Mechanization of Tobacco Processing

Processing tobacco consists of redrying and threshing operations to prepare tobacco for aging. Tobacco may be redried either as whole leaf or as "strip," which is the lamina of the leaf that has been removed in the threshing operations.

In a typical redrying plant, with no threshing equipment, the tobacco is brought into the receiving room and placed on "jacks," which are small four-wheel dollies used to facilitate movement of tobacco. It is weighed, regraded, and placed in temporary storage with tobacco of like grade. The actual processing begins with the blending operation, the first step of which is hand-placing the tobacco onto a moving belt. This belt carries the tobacco into a set of cleaning and ordering equipment designed to remove sand and to raise the moisture content of the leaves so that they can be handled without damage. The tobacco next passes over a picking belt where off-grade leaves and any foreign material not previously removed are picked out by hand. The tobacco then is conveyed to the redrier, where the moisture content is reduced to the proper level for aging. The tobacco is then packed into hogsheads or cases and shipped to a storage warehouse for aging.

A threshing plant performs all the operations of a redrying plant. However, in a threshing plant the tobacco leaves move from the picking belts to threshing machines rather than directly to the redrier. Here the lamina or "strip" is removed then redried and packed.

Tobacco processing plants are classified as either "conventional" or "superplants." The basic difference between the two types is size and degree of automation. Superplants have significantly larger capacities than conventional processing plants and are more completely automated or mechanized. For instance, superplants will normally use hoists and conveyers rather than manual labor for receiving tobacco. The packing operation in superplants is fully automated, while considerable hand labor is required in packing in conventional plants. Thus, labor productivity is substantially higher in superplants.

Preliminary analysis of labor productivity[20] in flue-cured tobacco processing plants indicates a positive relationship between plant size and output per man-hour in both threshing and redrying plants. Using the number of employees as a measure of plant size, an increase of 0.15 percent in output per man-hour was associated with a 1-percent increase in labor force in threshing plants. In redrying plants, labor output per man-hour increased 0.45 percent for each 1-percent increase in work force.

All new flue-cured processing plants built during the past 10 years have been of the superplant type, and the bulk of the processing capacity operated by domestic cigarette manufacturers is already of the superplant type. However, though a number of independent dealer plants are not now superplants, we can expect that by 1978 virtually all the flue-cured tobacco processing capacity will be of the superplant type. This development will have a significant impact on the structure of the processing industry and on the employment within the industry. With the reduction of manual labor, a higher proportion of workers will be female.

Impact of Demand Factors on Tobacco Production and Marketing

Demand for tobacco at the farm level is primarily dependent on consumer demand for tobacco products and the rate at which leaf tobacco is used in the manufacture of these products. Cigarettes are by far the largest outlet for tobacco, accounting for about four-fifths of tobacco used in the United States. Consequently, this discussion will refer primarily to cigarettes.

Consumer Demand

Cigarettes have traditionally been considered to be a product with an extremely inelastic demand function, although past attempts to statistically measure their demand elasticity have yielded widely varying results.[21] Nevertheless, this assumption of inelasticity, among other considerations, has been a major justification for taxation of cigarettes by State and local taxing authorities. Past responses to cigarette tax increases have generally supported the inelastic demand assumption. Lyon and Simon recently estimated the price elasticity of cigarettes as -0.511.

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[20] Regression analysis of data obtained from a survey of the tobacco processing industry covering the 1967 processing season, by Mktg. Econ. Div., Econ. Res. Serv., U.S. Dept. Agr.

[21] Lyon, Herbert L., and Simon, Julian L., Price Elasticity of the Demand for Cigarettes in the United States, Amer. Jour. Agr. Econ., Vol. 50, No. 4, Nov. 1968, pp. 888-895.

A very crude estimate of elasticity was made by stratifying Lyon and Simon's data into low, medium, and high price ranges, and estimating the elasticity for each strata.22/ This yielded price elasticities of -0.377 for the low range, -0.546 for the medium range, and -0.644 for the high range. Thus, there appears to be some indication of consumer resistance to cigarette price increases, especially in the price range above 26 cents per pack.

Another aspect of consumer demand for tobacco products, in addition to the price elasticity, is the level of demand. Since the release of the Surgeon General's report on smoking and health in 1964, there has been an increasing effort on the part of various public and private agencies to reduce the demand for cigarettes. It is expected that these efforts will intensify. There is also the possibility of banning or restricting cigarette advertising on radio and television.

The net effect of these factors on the demand for tobacco products is difficult to determine. However, current projections of the demand for cigarettes in 1975 indicate virtually no change in total cigarette consumption from 1968.23/ Cigarette smokers are projected to decline from 46.3 percent of adults 18 years and over to 40.9 percent. Population growth, together with increased exports, is expected to offset the lower percentage of smokers and leave total consumption unchanged.

Quantity of Tobacco Used in Cigarettes

The quantity of tobacco used per thousand cigarettes has declined about 28 percent since the mid-1950's. While cigarette production increased nearly 20 percent from 1958-59 to 1967-68, the quantity of domestic tobacco required for cigarette manufacture remained at the 1958-59 level. This decrease in the quantity of domestic tobacco per thousand cigarettes has resulted from increased use of imported oriental tobacco, increased use of homogenized tobacco sheet, the shift to filter tip cigarettes, reduction in the circumference of cigarettes, lengthened filters, and certain manufacturing efficiencies. It is estimated that under current manufacturing procedures, about 94 percent of the tobacco leaf is utilized in cigarettes, compared with 77 percent 15 years ago.

There is still room for the above factors to further reduce the quantity of tobacco per thousand cigarettes. A continuation of the trend to filter cigarettes could result in filter tips accounting for 88 percent of the market in 1975, compared with 73 percent in 1967-68. Also, an increase in the average length of filters is expected. In 1968, several brands of "thin" cigarettes, having reduced circumferences, were introduced to the market. The attainment of a significant market share by this type of cigarettes would reduce tobacco requirements. The use of low-nicotine oriental tobacco may very likely increase, also reducing requirements for domestic tobacco.

22/ In these estimates made by Donn Reimund, Mktg. Econ. Div., Econ. Res. Serv., U.S. Dept. Agr., low prices were 23 cents or less per pack, medium prices were 23.1 to 26 cents per pack, and high prices were 26.1 cents or over per pack.

23/ Conover, Arthur G., Longer-Range Prospects for Domestic Consumption of Cigarette Tobacco, Forty-sixth National Outlook Agr. Conf., Feb. 1969.

In addition to these factors that have been operating for the past 15 years, recent experimental developments hold the potential of reducing even further the quantity of leaf tobacco required for cigarette production. A method of freeze-drying flur-cured tobacco has been developed by the North Carolina Agricultural Experiment Station. This freeze-dried tobacco has about twice the filling capacity of tobacco processed in the traditional manner. Consequently, this development could potentially halve the amount of flue-cured tobacco required per thousand cigarettes. This estimate, of course, assumes that all the flue-cured requirement would be met by the freeze-dried tobacco and is the upper limit to the amount of tobacco that would be replaced by this technology.

Impact of Demand Factors

The short-run effect of the demand situation is to create uncertainty throughout the industry. This uncertainty retards capital investment and will quite likely dampen the rate at which increased mechanization in tobacco production and marketing will occur.

With no growth in the projected final demand for tobacco products and a decreasing quantity of tobacco required per unit of final product, the long-range outlook is for declining production of flue-cured tobacco. There are too many unknown variables, both political and technical, to specify the extent of the decline.

However, the cost situation increases incentive to mechanize in spite of a declining market. And, with mechanization now technically feasible, a substantial reduction in employment is anticipated. Thus, it is imperative to examine the work force and the probable impact such changes will have on these people relative to facilitating rational adjustment of resources.

III. INVENTORY AND DESCRIPTION OF TOBACCO PRODUCTION WORKERS

Introduction

A survey of available sources disclosed that the U.S. Census of Agriculture for 1964 is essentially the only source of data on social and economic characteristics of tobacco production workers (farm operators, their families, and hired workers). Although the 1964 Census presents data on the major characteristics of commercial tobacco farm operators and members of their households, data on hired workers are limited to the number of regular workers (those working 150 or more days per year) employed on farms and the annual farm wage bill for 1964.

Absence of data on socioeconomic characteristics of hired workers seriously limits any attempt to describe the human resource input in tobacco production. This is especially true when we consider that seasonal workers, according to the 1964 Census of Agriculture, constitute a large segment of this work force.

Census data associated with tobacco production are organized in accordance with the considerable variation among producing farms (table 9). In keeping with the significance of such variation, the following discussion of the characteristics of people associated with flue-cured tobacco production in the study area is presented by four of the Census farm classes: Commercial, part time, part-retirement, and other.[24]

Commercial Tobacco Farm Operators and Their Households

In 1964, the study area contained 84,245 commercial tobacco farmers (table 10). The total household population was 352,944, an average of 4.2 members per household, including the operator (table 11). These farmers and their household members collectively represented about 9 percent of the study area's total population and about 12 percent of the nonmetropolitan population. Among the five production areas, the distribution of all farms and farm household

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[24] Commercial tobacco farms as defined in the U.S. Census of Agriculture are (1) those farms with farm sales of $2,500 or more with tobacco contributing 50 percent or more of this value and (2) farms with sales of $50 to $2,499, of which 50 percent or more are from tobacco, provided that the farm operator is under 65 years of age and does not work off the farm 100 or more days.

Part-time tobacco farms are those with farm product sales of $50 to $2,499, if tobacco accounts for 50 percent or more of this value and if the operator is under 65 years of age and works off the farm 100 or more days.

Part-retirement tobacco farms are defined as those with farm product sales of $50 to $2,499, if 50 percent or more of this value is derived from tobacco and if the operator is 65 years old or over.

Other farms do not correspond to any single Census farm type class definition. Their number (13,000) represents the difference between the number of all farms reporting growing tobacco in the study area (105,000) and the summation of commercial, part-time, and part-retirement tobacco farms (92,000). Other farms, therefore, represent commercial, part-time, and part-retirement farms that produced some tobacco, but specialized in some other product or group of products.

Table 9.--Number, acreage, and production, farms in five flue-cured tobacco belt States and in study area, by type of farm, 1964 1/

Item	All farms, five States	All farms, study area	Col. 2 as percentage of Col. 1	Study area--production area and State part										
				Tide-water,	Pee Dee-Lumber River			Coastal Plains,	Piedmont			Georgia-Florida		
				N.C. 15	N.C. 16	S.C. 16	Total	N.C. 17	N.C. 18	Va. 18	Total	Ga. 29	Fla. 29	Total
	Thou.	Thou.	Pct.	Thou.	Thou.	Thou.	Thou.	Thou.	Thou.	Thou.	Thou.	Thou.	Thou.	Thou.
Farms:														
All farms	408.7	144.5	35.4	19.1	9.2	13.8	23.0	34.9	25.2	17.8	43.0	15.2	9.4	24.6
Tobacco farms	127.6	104.9	82.2	13.2	6.6	11.8	18.4	28.8	19.3	12.6	31.9	9.6	3.0	12.6
Commercial tobacco farms	94.7	84.2	88.9	10.5	4.6	9.7	14.3	25.5	16.6	10.8	27.4	4.5	2.0	6.5
Part-time and part-retirement farms	10.2	8.1	78.4	1.4	.5	.8	1.3	1.1	2.1	1.4	3.5	.4	.3	.7
Other farms	22.7	12.7	55.9	1.2	1.6	1.3	2.9	2.2	.7	.4	1.1	4.7	.7	5.4
	1,000 acres	1,000 acres	Pct.	1,000 acres	1,000 acres	1,000 acres	1,000 acres	1,000 acres	1,000 acres	1,000 acres	1,000 acres	1,000 acres	1,000 acres	1,000 acres
Tobacco acreage:														
All farms	606.0	525.5	86.7	65.5	31.2	50.9	82.1	178.4	90.0	52.4	142.4	41.6	15.5	57.1
Commercial tobacco farms	507.6	460.5	90.7	57.9	23.7	45.4	69.1	166.1	83.5	48.9	132.4	22.5	12.4	34.9
Part-time and part-retirement farms	14.6	11.6	79.5	1.8	.6	1.0	1.6	1.6	3.5	2.2	5.7	.6	.4	1.0
	Mil. lb.	Mil. lb.	Pct.	Mil. lb.	Mil. lb.	Mil. lb.	Mil. lb.	Mil. lb.	Mil. lb.	Mil. lb.	Mil. lb.	Mil. lb.	Mil. lb.	Mil. lb.
Total production:														
All farms	1,257.2	1,099.8	87.5	137.1	64.1	102.8	166.9	400.6	186.2	105.4	291.6	77.7	25.9	103.6
Commercial tobacco farms	1,082.8	986.3	91.1	123.7	50.9	93.8	144.7	378.2	175.0	99.7	274.7	43.9	21.1	65.0
Part-time and part-retirement farms	21.5	17.2	80.0	2.7	1.0	1.5	2.5	2.4	5.4	3.2	8.6	.8	.4	1.2

1/ Data presented in this and subsequent tables relate essentially to flue-cured tobacco farms. Since flue-cured tobacco farms were not completely separable, the figures include small amounts of shade-grown tobacco in the Florida State part and some burley grown in the remainder of the delineated flue-cured belt. The five "flue-cured" States are: Virginia, North and South Carolina, Georgia, and Florida.

Source: 1964 Census of Agriculture.

Table 10.--Commercial tobacco farm operators by tenure of operator, study area, 1964

Study area (production area and State part)	All operators	Tenure of operator					
		Full-owner		Part-owner		Tenant	
	Number	Number	Percent	Number	Percent	Number	Percent
Tidewater:							
N.C. 15	10,492	3,366	32.1	4,253	40.5	2,873	27.4
Pee Dee-Lumber River:							
N.C. 16	4,543	1,029	22.7	1,177	25.9	2,337	51.4
S.C. 16	9,670	2,747	28.4	2,154	22.3	4,769	49.3
Total	14,213	3,776	26.6	3,331	23.4	7,106	50.0
Coastal Plains:							
N.C. 17	25,498	4,594	18.0	6,393	25.1	14,511	56.9
Piedmont:							
N.C. 18	16,574	4,070	24.6	5,244	31.6	7,260	43.8
Va. 18	10,917	2,676	24.5	2,934	26.9	5,307	48.6
Total	27,491	6,746	24.5	8,178	29.8	12,567	45.7
Georgia-Florida:							
Ga. 29	4,536	1,402	30.9	1,427	31.5	1,707	37.6
Fla. 29	2,015	1,087	53.9	729	36.2	199	9.9
Total	6,551	2,489	38.0	2,156	32.9	1,906	29.1
Total	84,245	20,971	24.9	24,311	28.9	38,963	46.2

Source: 1964 Census of Agriculture.

Table 11.--Household members in commercial tobacco farm operator households, by tenure of farm operator, study area, 1964

Item	Total, study area	Study area--production area and State part										
		Tide-water, N.C. 15	Pee Dee-Lumber River			Coastal Plains, N.C. 17	Piedmont			Georgia-Florida		
			N.C. 16	S.C. 16	Total		N.C. 18	Va. 18	Total	Ga. 29	Fla. 29	Total
	Number											
Total persons in household	352,944	41,973	21,498	43,839	65,337	107,527	67,394	44,622	112,016	17,997	8,094	26,091
Tenure of operator:												
Full-owner	71,005	11,388	3,608	9,770	13,378	15,154	13,287	8,920	22,207	4,859	4,019	8,878
Part-owner	101,654	17,988	5,544	9,797	15,341	26,245	20,782	12,349	33,131	5,716	3,233	8,949
Tenant	180,285	12,597	12,346	24,272	36,618	66,128	33,325	23,353	56,678	7,422	842	8,264

Source: 1964 Census of Agriculture.

population was essentially the same as the distribution for commercial tobacco farms. Piedmont accounted for 32 percent of all commercial tobacco farms in the study area; Coastal Plain, 31 percent; Pee Dee-Lumber River, 18 percent; Tidewater, 12 percent; and Georgia-Florida, 7 percent.

Of the total commercial tobacco farmers, a surprisingly large proportion, 46 percent, were tenants (table 10).[25] Moreover, tenant farmer households had an average of 4.6 persons, somewhat more than part-owner and full-owner households, which averaged 4.2 and 3.4. As a result, more than half (51 percent, or 180,285 persons) the commercial tobacco farm operators and their family members were in tenant households (table 11). Part owners were the second largest tenure class, accounting for 29 percent of both the farmer and the household population. Full owners represented the remaining 25 percent of operators and 20 percent of household population.

Thirty percent of all commercial tobacco farm operators in the study area were Negro, compared with 6 percent of all U.S. farm operators (table 12). Because of the larger size of the average Negro household (5.1 persons, compared with 3.8 for whites), Negroes

Table 12.--Commercial tobacco farm operators by race of operator, study area, 1964

Study area (production area and State part)	Total operators	Race			
		White		Negro and other races	
	Number	Number	Percent	Number	Percent
Tidewater:					
N.C. 15	10,492	7,850	74.8	2,642	25.2
Pee Dee-Lumber River:					
N.C. 16	4,543	2,403	52.9	2,140	47.1
S.C. 16	9,670	5,838	60.4	3,832	39.6
Total	14,213	8,241	58.0	5,972	42.0
Coastal Plains:					
N.C. 17	25,498	18,201	71.4	7,297	28.6
Piedmont:					
N.C. 18	16,574	12,503	75.4	4,071	24.6
Va. 18	10,917	6,627	60.7	4,290	39.3
Total	27,491	19,130	69.6	8,361	30.4
Georgia-Florida:					
Ga. 29	4,536	3,868	85.3	668	14.7
Fla. 29	2,015	1,631	80.9	384	19.1
Total	6,551	5,499	83.9	1,052	16.1
Total for study area	84,245	58,921	69.9	25,324	30.1

Source: 1964 Census of Agriculture.

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[25] In the Nation, tenants represent only 17 percent of all farm operators.

comprised about 36 percent of operator household population (table 13). This pattern of population distribution for the combined study area (approximately one-third Negro and two-thirds white), existed also in the Tidewater, Coastal Plain, and Piedmont production areas. In the Pee Dee-Lumber River area, however, Negroes represented slightly more than half (51 percent) of the area's population. The main countering average was in the Georgia-Florida area, where the Negro population was only 19 percent of the total.

The proportion of Negro operators who were tenants was larger than that for white in all production areas. For the entire study area, 66 percent of all Negro operators were tenants, whereas only 38 percent of all white operators were in this tenure class (table 14).

Age distribution of commercial tobacco farmers was relatively uniform among the five production areas (table 15), but differed significantly from that of the total U.S. labor force. Generally, tobacco farmers were older, averaging 47 years, contrasted with about 37 years for the total labor force. Percentage distribution by age group for study area tobacco farmers and for the total U.S. employed labor force is as follows:

Age in 1964	Commercial flue-cured tobacco farmers	Total employed U.S. labor force
	Percent	Percent
Under 25	3	24
25-54	69	58
55-64	22	18
65 and over	6	1/

1/ The 18 percent in line 3 includes all persons employed in the labor force who are 55 or older.

The generally older age of most operators may hinder many of them in finding alternate employment should they be displaced, because of the prevailing emphasis placed on youth by many employers.

Age distribution of the study area's tobacco farm household population shows 32 percent were under 15 and nearly 4 percent, 65 or over (table 16). Thus, a total of 36 percent were in what is generally considered the dependent age group. Of the remaining 64 percent, 27 percent were between 15 and 35, 13 percent from 35 to 45, and 24 percent from 45 to 65.

About 66 percent of all commercial tobacco farmers in the study area had completed 8 years of school or less; 31 percent had attended or completed high school; and 3 percent had attended or completed college (table 17). The latter two percentages compare with 41 and 10 percent for all commercial farmers in the Nation. There was some variability among the five production areas, with farm operators in the Virginia segment of the Piedmont area having the lowest overall educational level and those residing in the Florida portion of the Georgia-Florida area having the highest.

Table 13.--Members in households with commercial tobacco farm operators by race of household members, study area, 1964

Race	Total, study area	Study area--production area and State part										
		Tide-water, N.C. 15	Pee Dee-Lumber River			Coastal Plains, N.C. 17	Piedmont			Georgia-Florida		
			N.C. 16	S.C. 16	Total		N.C. 18	Va. 18	Total	Ga. 29	Fla. 29	Total
	Number											
White	224,514	30,321	9,411	22,376	31,787	69,464	46,212	25,694	71,906	14,610	6,426	21,036
Negro and other races	128,430	11,652	12,087	21,463	33,550	38,063	21,182	18,928	40,110	3,387	1,668	5,055
Total persons in household	352,944	41,973	21,498	43,839	65,337	107,527	67,394	44,622	112,016	17,997	8,094	26,091

Source: 1964 Census of Agriculture.

Table 14.—Commercial tobacco farm operators by race and tenure of operator, study area, 1964

Study area (production area and State part)	Total operators		Tenure of operators					
			Full-owner		Part-owner		Tenant	
	White	Negro and other races	White	Negro and other races	White	Negro and other races	White	Negro and other races
	Number	Number	Percent	Percent	Percent	Percent	Percent	Percent
Tidewater:								
N.C. 15	7,850	2,642	32.9	29.5	40.7	40.0	26.4	30.5
Pee Dee-Lumber River:								
N.C. 16	2,403	2,140	28.8	15.7	35.6	15.0	35.6	69.3
S.C. 16	5,838	3,832	35.5	17.5	28.0	13.6	36.5	68.9
Total	8,241	5,972	33.6	16.9	30.2	14.1	36.2	69.0
Coastal Plains:								
N.C. 17	18,201	7,297	21.2	9.8	30.2	12.4	48.6	77.8
Piedmont:								
N.C. 18	12,503	4,071	28.6	12.4	36.5	16.6	34.4	71.0
Va. 18	6,627	4,290	30.6	15.0	32.0	18.9	37.4	66.1
Total	19,130	8,361	29.2	13.8	35.0	17.8	35.8	68.4
Georgia-Florida:								
Ga. 29	3,868	668	32.6	21.0	34.1	16.4	33.3	62.6
Fla. 29	1,631	384	55.0	49.5	37.2	31.8	7.8	18.7
Total	5,499	1,052	39.3	31.4	35.0	22.0	25.7	46.6
Total for study area	58,921	25,324	28.8	15.7	33.6	17.9	37.6	66.4

Source: 1964 Census of Agriculture.

Table 15.--Commercial tobacco farm operators by age of operator, study area, 1964

Age of operators	Total, study area	Study area--production area and State part										
		Tide-water, N.C. 15	Pee Dee-Lumber River			Coastal Plains, N.C. 17	Piedmont			Georgia-Florida		
			N.C. 16	S.C. 16	Total		N.C. 18	Va. 18	Total	Ga. 29	Fla. 29	Total
	--Number--											
All operators	84,245	10,492	4,543	9,670	14,213	25,498	16,574	10,917	27,491	4,536	2,015	6,551
	--Percent--											
Under 25 years	3.1	2.5	2.3	2.7	2.6	2.9	4.1	3.7	3.9	2.9	1.4	2.5
25-34	11.9	12.1	11.9	12.6	12.3	12.2	12.0	11.0	11.6	11.2	9.7	10.7
35-44	24.6	23.4	25.9	27.1	26.7	26.2	23.2	22.9	23.1	22.7	20.0	21.8
45-54	32.3	33.1	32.2	31.8	31.9	33.3	30.4	31.2	30.7	34.2	34.1	34.2
55-64	22.4	23.4	21.5	20.8	21.1	20.9	23.5	24.0	23.7	23.3	26.1	24.2
65 and over	5.7	5.5	6.2	5.0	5.4	4.5	6.8	7.2	7.0	5.7	8.7	6.6

Source: 1964 Census of Agriculture.

Table 16.--Household members in commercial tobacco farm operator households, by age and sex of members, study area, 1964

Item	Total household members	Age of household members								
		Under 5	5-9	10-14	15-24	25-34	35-44	45-54	55-64	65 and over
	No.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.
Total males in household	181,916	7.3	10.7	14.0	19.5	7.7	12.0	14.9	10.5	3.4
Tidewater:										
N.C. 15	21,376	7.9	10.3	12.8	18.2	7.9	11.4	16.5	11.4	3.6
Pee Dee-Lumber River:										
N.C. 16	11,153	8.1	12.5	15.9	20.5	7.0	10.4	12.8	9.7	3.1
S.C. 16	22,441	7.4	11.3	15.3	21.5	7.3	12.0	13.3	9.4	2.5
Total	33,594	7.6	11.7	15.5	21.2	7.2	11.4	13.2	9.5	2.7
Coastal Plains:										
N.C. 17	55,296	7.3	10.6	14.6	19.2	7.7	13.0	15.0	9.8	2.8
Piedmont:										
N.C. 18	34,888	7.3	10.3	12.6	20.2	8.1	11.7	15.0	11.0	3.8
Va. 18	23,193	6.9	10.5	13.7	18.8	8.1	11.8	15.0	10.9	4.3
Total	58,081	7.1	10.4	13.0	19.7	8.0	11.8	15.0	11.0	4.0
Georgia-Florida:										
Ga. 29	9,415	6.8	10.6	13.8	19.1	6.7	11.3	15.4	12.6	3.7
Fla. 29	4,154	6.9	9.5	13.9	18.2	6.3	11.9	15.6	13.4	4.3
Total	13,569	6.8	10.2	13.8	18.9	6.6	11.5	15.5	12.8	3.9
Total females in household	171,028	7.4	10.9	14.4	17.5	9.1	14.4	14.9	7.8	3.6
Tidewater:										
N.C. 15	20,597	7.0	9.9	13.5	17.7	9.0	14.5	16.6	8.1	3.7
Pee Dee-Lumber River:										
N.C. 16	10,345	7.8	12.1	17.2	17.5	8.0	14.6	13.3	6.6	2.9
S.C. 16	21,398	7.9	11.4	16.0	18.5	8.9	14.2	13.4	6.9	2.8
Total	31,743	7.8	11.6	16.4	18.2	8.6	14.3	13.4	6.8	2.9
Coastal Plains:										
N.C. 17	52,231	7.4	11.1	14.5	17.5	9.4	14.6	14.8	7.4	3.3
Piedmont:										
N.C. 18	32,506	7.3	11.2	13.9	16.8	9.0	14.2	14.7	9.0	3.9
Va. 18	21,429	7.4	10.5	13.7	18.3	9.0	13.8	14.7	7.8	4.8
Total	53,935	7.4	10.9	13.8	17.4	9.0	14.0	14.7	8.5	4.3
Georgia-Florida:										
Ga. 29	8,582	7.3	9.8	12.4	16.4	9.0	14.2	18.8	8.7	3.4
Fla. 29	3,940	6.7	10.3	15.0	14.7	9.0	14.9	15.5	9.6	4.3
Total	12,522	7.2	10.0	13.4	16.0	9.1	14.5	17.1	9.0	3.7

Source: 1964 Census of Agriculture.

Table 17.--Commercial tobacco farm operators by educational attainment of operator, study area, 1964

Educational attainment	Total, study area	Study area--production area and State part										
		Tide-water, N.C. 15	Pee Dee-Lumber River			Coastal Plains, N.C. 17	Piedmont			Georgia-Florida		
			N.C. 16	S.C. 16	Total		N.C. 18	Va. 18	Total	Ga. 29	Fla. 29	Total
	Number											
All operators	84,245	10,492	4,543	9,670	14,213	25,498	16,574	10,917	27,491	4,536	2,015	6,551
	Percent											
Elementary school	65.6	63.3	66.1	68.0	67.4	63.6	65.5	72.2	68.1	65.6	56.7	62.7
High school	31.1	33.9	30.4	29.1	29.5	33.0	31.5	25.1	29.0	29.8	36.6	31.9
College	3.3	2.8	3.5	2.9	3.1	3.4	3.0	2.7	2.9	4.6	6.7	5.4

Source: 1964 Census of Agriculture.

Compared with educational attainment of all commercial farm operators in the Nation, however, that of the tobacco farmer in the flue-cured belt was relatively low. When compared with the total U.S. labor force, a comparison which indicates the type of competition displaced tobacco workers would face for alternative employment, commercial tobacco farm operators appear considerably disadvantaged. As a group, they average about 7.6 years of school, compared with 12.2 years for all U.S. workers.

Educational attainment of members of tobacco farm operator households decreased as age of members increased. In the group aged 14 to 24, 31 percent had 8 years of school or less; for those 25 to 34, the figure was slightly higher at 33 percent; but in the group 55 and over, more than twice as many, 76 percent, were in this category of low education (table 18). Similarly, about 66 percent of the operator household population aged 14 to 24 had attended or completed high school; for those aged 25 to 34, this proportion decreased to 60 percent; and for those 55 and over, it dropped to 20 percent.

This trend of increasing educational attainment by younger generations, plus the concurrent widespread demand by employers for workers with more education, is not, of course, unique to the tobacco study area but rather is consistent with the general trend in both rural and urban America. Therefore, low educational attainment (that is, grade school and incompleted high school) of many tobacco farm operators and their household members, especially older operators and members, portends a disadvantage in competing for many types of nonfarm jobs.

About 32 percent of all commercial tobacco farmers in the study area were engaged in some off-farm work during 1964 (table 19). This proportion was almost a third less than the average of 46 percent for all U.S. farmers. Of those tobacco farmers who did off-farm work, about 63 percent worked less than 100 days, 13 percent worked between 100 and 199 days, and about 24 percent worked 200 days or more (table 20). This distribution was essentially the same in all production areas, except in the Florida portion of the Georgia-Florida area. Here, 43 percent of the commercial tobacco farmers worked 200 or more days off the farm.

About 66 percent of members of tobacco farm operator households received income in 1964 from sources other than the farm where they lived (table 21). This proportion is lower than the national average of 81 percent and may reflect the lack of either employment opportunities in the study area or the limited qualifications of household members for available jobs. Furthermore, the average amount of such income in the study area--$1,572--was less than half the corresponding U.S. average--$3,184. For more than half (53 percent) the household members in the study area, income from sources other than farm operated was below $1,500; 34 percent received from $1,500 to $4,999; and 13 percent received $5,000 and above (table 22).

In households of commercial tobacco farm operators, the number of persons working 15 hours or more on the farm during the week preceding enumeration was small. Only 21,134 farms--25 percent of the total--reported such persons (table 23). The enumeration occurred on various dates during November and December 1964. The average number of such persons per farm, 1.5 workers, was also small. The enumeration, however, took place in an off-season period in tobacco production.

Table 18.--Household members in commercial tobacco farm operator households, by age and educational attainment of household members, study area, 1964

Item	Total household members	Educational attainment		
		Elementary school	High school	College
	Number	Percent	Percent	Percent
Age of household members				
14 to 24:				
Tidewater:				
N.C. 15	8,702	22.0	76.0	2.0
Pee Dee-Lumber River:				
N.C. 16	4,793	35.8	61.6	2.6
S.C. 16	10,403	39.2	58.5	2.3
Total	15,196	38.1	59.5	2.4
Coastal Plains:				
N.C. 17	23,011	26.7	69.8	3.5
Piedmont:				
N.C. 18	14,387	31.4	66.2	2.4
Va. 18	9,659	38.4	58.9	2.7
Total	24,046	34.2	63.3	2.5
Georgia-Florida:				
Ga. 29	3,774	24.7	71.3	4.0
Fla. 29	1,564	22.9	71.5	5.6
Total	5,338	24.1	71.4	4.5
25 to 34:				
Tidewater:				
N.C. 15	3,556	23.8	68.3	7.9
Pee Dee-Lumber River:				
N.C. 16	1,600	41.7	52.1	6.2
S.C. 16	3,546	41.4	52.1	6.5
Total	5,146	41.5	52.1	6.4
Coastal Plains:				
N.C. 17	9,182	30.2	63.7	6.1
Piedmont:				
N.C. 18	5,736	31.8	61.3	6.9
Va. 18	3,799	45.3	50.1	4.6
Total	9,535	37.2	56.8	6.0
Georgia-Florida:				
Ga. 29	1,417	26.7	59.1	14.2
Fla. 29	616	11.5	75.5	13.0
Total	2,033	22.1	64.1	13.8
55 and over:				
Tidewater:				
N.C. 15	5,626	77.7	20.0	2.3
Pee Dee-Lumber River:				
N.C. 16	2,411	70.1	23.9	6.0
S.C. 16	4,765	76.0	19.7	4.3
Total	7,176	74.0	21.1	4.9
Coastal Plains:				
N.C. 17	12,587	76.2	19.2	4.6
Piedmont:				
N.C. 18	9,379	75.4	19.5	5.1
Va. 18	6,229	79.0	16.5	4.5
Total	15,608	76.8	18.3	4.9
Georgia-Florida:				
Ga. 29	2,580	73.1	23.5	3.4
Fla. 29	1,285	74.7	22.1	3.2
Total	3,865	73.6	23.0	3.4
Total for study area:				
14 to 24	76,293	30.6	66.5	2.9
25 to 34	29,452	33.1	60.0	6.9
55 and over	44,862	76.0	19.6	4.4

Source: 1964 Census of Agriculture.

Table 19.--Commercial tobacco farm operators by off-farm work of operator, study area, 1964

Study area (production area and State part)	Commercial tobacco farm operators		
	Total	With off-farm work	
	Number	Number	Percent
Tidewater:			
N.C. 15	10,492	3,878	37.0
Pee Dee-Lumber River:			
N.C. 16	4,543	1,726	38.0
S.C. 16	9,670	2,799	28.9
Total	14,213	4,525	31.8
Coastal Plains:			
N.C. 17	25,498	7,896	31.0
Piedmont:			
N.C. 18	16,574	5,523	33.3
Va. 18	10,917	2,721	24.9
Total	27,491	8,244	30.0
Georgia-Florida:			
Ga. 29	4,536	1,853	40.9
Fla. 29	2,015	1,017	50.5
Total	6,551	2,870	43.8
Total for study area	84,245	27,413	32.5

Source: 1964 Census of Agriculture.

Table 20.--Commercial tobacco farm operators by duration of off-farm work of operator, study area, 1964

Amount of off-farm work	Total, study area	Study area--production area and State part										
		Tide-water, N.C. 15	Pee Dee-Lumber River			Coastal Plains, N.C. 17	Piedmont			Georgia-Florida		
			N.C. 16	S.C. 16	Total		N.C. 18	Va. 18	Total	Ga. 29	Fla. 29	Total
	Number											
All operators	27,413	3,878	1,726	2,799	4,525	7,896	5,523	2,721	8,244	1,853	1,017	2,870
	Percent											
Less than 25 days	28.2	27.2	26.7	28.8	28.0	32.3	25.5	28.4	26.4	25.2	21.6	23.9
25-99	34.5	38.8	40.8	36.9	38.4	35.0	29.4	34.0	30.9	36.4	21.5	31.2
100-149	9.1	8.7	6.9	8.0	7.6	9.0	10.4	6.4	9.1	12.1	11.2	11.8
150-199	4.0	4.6	5.0	3.6	4.1	4.2	2.7	4.2	3.2	6.1	2.7	4.9
200 days or more	24.2	20.7	20.6	22.7	21.9	19.5	32.0	27.0	30.4	20.2	43.0	28.2

Source: 1964 Census of Agriculture.

Table 21.--Commercial tobacco farm operator households by income from sources other than farm operated, study area, 1964

Study area (production area and State part)	Commercial tobacco farm operator households		
	Total	With income from sources other than farm operated	
	Number	Number	Percent
Tidewater:			
N.C. 15	10,492	7,483	71.3
Pee Dee-Lumber River:			
N.C. 16	4,543	2,981	65.6
S.C. 16	9,670	6,149	63.6
Total	14,213	9,130	64.2
Coastal Plains:			
N.C. 17	25,498	16,410	64.4
Piedmont:			
N.C. 18	16,574	11,283	68.1
Va. 18	10,917	6,476	59.3
Total	27,491	17,759	64.6
Georgia-Florida:			
Ga. 29	4,536	3,368	74.3
Fla. 29	2,015	1,722	85.5
Total	6,551	5,090	77.7
Total for study area	84,245	55,372	66.3

Source: 1964 Census of Agriculture.

Table 22.--Commercial tobacco farm operator households by income from sources other than farm operated for all household members, study area, 1964

Income	Total, study area	Study area--production area and State part										
		Tide-water, N.C. 15	Pee Dee-Lumber River			Coastal Plains, N.C. 17	Piedmont			Georgia-Florida		
			N.C. 16	S.C. 16	Total		N.C. 18	Va. 18	Total	Ga. 29	Fla. 29	Total
	Number											
Total number in household	55,872	7,483	2,981	6,149	9,130	16,410	11,283	6,476	17,759	3,368	1,722	5,090
	Percent											
$1-$499	26.1	26.8	26.2	27.6	27.2	28.9	23.3	27.4	24.8	20.2	13.7	18.1
$500-$999	17.1	20.7	16.8	17.1	17.0	18.1	15.2	14.9	15.1	19.1	11.9	16.6
$1,000-$1,499	10.3	11.7	11.2	11.7	11.6	10.0	7.8	10.5	8.8	12.4	11.5	12.1
$1,500-$1,999	6.5	6.8	5.3	6.1	5.8	7.1	5.8	5.6	5.7	8.7	7.4	8.2
$2,000-$2,999	11.6	10.8	11.4	11.9	11.7	11.1	12.2	11.4	11.9	12.9	13.9	13.2
$3,000-$3,999	9.5	8.8	9.4	9.3	9.3	8.2	11.4	10.8	11.2	8.9	10.9	9.6
$4,000-$4,999	6.2	4.8	6.8	5.8	6.1	5.5	7.8	5.6	7.0	7.1	9.1	7.8
$5,000 and over	12.7	9.6	12.9	10.5	11.3	11.1	16.5	13.8	15.5	10.8	21.6	14.4

Source: 1964 Census of Agriculture.

Table 23.--Persons in commercial tobacco farm households working specified hours on the farm during specified week and total hours worked, study area, 1964 1/

Item	Total, study area	Study area--production area and State part										
		Tide-water, N.C. 15	Pee Dee-Lumber River			Coastal Plains, N.C. 17	Piedmont			Georgia-Florida		
			N.C. 16	S.C. 16	Total		N.C. 18	Va. 18	Total	Ga. 29	Fla. 29	Total
	Number											
Farm operators reporting	21,134	1,972	898	2,084	2,982	5,358	4,728	4,852	9,580	691	551	1,242
Persons working 15 or more hours	31,710	2,608	1,273	3,497	4,770	8,138	7,027	7,554	14,581	830	783	1,613
Total hours worked	1,097,412	84,812	36,055	111,363	147,418	252,392	247,914	310,536	558,450	28,278	26,062	54,340

1/ During the week preceding enumeration conducted in November and December, 1964.

Source: 1964 Census of Agriculture.

Part-Time and Part-Retirement Farm Operators and Their Households

The 1964 Census of Agriculture classified the operations of 4,990 tobacco farms in the study area as part-time and 3,062 farms as part-retirement and reported 22,065 and 8,991 persons in these households (table 25).

Compared with those on commercial tobacco farms, this combined group of farmers and their household members was less educated and had a higher proportion of Negroes (tables 24 and 25). However, a higher incidence of full and part ownership existed among them--74 percent for part-time and 87 percent for part-retirement operators (table 26)--compared with 54 percent among commercial tobacco farm operators. Both part-time and part-retirement farmers are, as groups, less dependent on the farm because of other income sources. The proportion of part-time farm households receiving more income from other sources than from the sale of farm products was 83 percent, and the proportion for part-retirement households was 92 percent. This contrasts with 8 percent for commercial tobacco farmers. Although total income from sources other than the farm operated was $3,000 or more for 57 percent of the part-time farm households, which is twice as large as the corresponding proportion of 28 percent for commercial tobacco farm households, the number of part-retirement farm households having such income was considerably smaller at 12 percent (table 27).

"Other" Farms Growing Tobacco

There are no social, economic, or other data available from the 1964 Census of Agriculture that can be specifically associated with human resources engaged in tobacco production in the 13,000 "other" farms that report growing tobacco. However, since these farms occur among all farm classes, it may be reasonable to assume that the characteristics of the operators and their household members do not differ markedly from those for other tobacco farms in the study area.

Hired Workers

According to the 1964 Census of Agriculture, about 46 percent of all commercial tobacco farms in the study area reported an annual wage bill of less than $500; 45 percent had wage bills between $500 and $2,499; and 9 percent paid $2,500 or more in wages (table 28). These percentages show a majority of the farms having a small expenditure for wages. However, the farm employment pattern for all farms in North Carolina, the State producing the most flue-cured tobacco, shows an extremely high peak of intensive employment beginning approximately July 1 and ending in the latter part of August. The U.S. Department of Labor reported a peak employment in North Carolina tobacco production of 166,045 workers in August 1968;[26] and the U.S. Department of Agriculture reported 202,000 hired workers for all farms in North Carolina in July 1968.[27] The seasonal trend of marked changes in the number of hired workers employed on farms in North Carolina is shown in figure 4.

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[26] Farm Labor Development, U.S. Dept. Labor, Aug. 1968.

[27] Farm Labor, U.S. Dept. Agr., Aug. 1968.

Table 24.--Household members in part-time and part-retirement tobacco farm households by age and educational attainment of household members, study area, 1964

Item	Total, study area		Educational attainment					
			Elementary school		High school		College	
	Part-time households	Part-retirement households	Part-time households	Part-retirement households	Part-time households	Part-retirement households	Part-time households	Part-retirement households
	Number	Number	Percent	Percent	Percent	Percent	Percent	Percent
Age of household members								
14 to 24:								
Tidewater	899	152	26.2	46.7	71.2	53.3	2.6	---
Pee Dee-Lumber River	733	348	35.7	49.1	64.3	50.9	---	---
Coastal Plains	537	154	13.2	33.8	83.6	57.8	3.2	8.4
Piedmont	1,924	499	27.0	34.9	70.9	63.9	2.1	1.2
Georgia-Florida	345	106	24.6	26.4	75.4	73.6	---	---
25 to 34:								
Tidewater	457	57	27.8	28.1	65.0	63.1	7.2	8.8
Pee Dee-Lumber River	290	135	39.0	51.1	54.1	40.7	6.9	8.2
Coastal Plains	260	76	29.6	39.5	58.9	42.1	11.5	18.4
Piedmont	1,129	209	31.6	41.1	63.5	54.1	4.9	4.8
Georgia-Florida	197	41	35.6	48.8	61.9	36.6	2.5	14.6
55 and over:								
Tidewater	215	846	84.4	85.1	15.6	11.7	---	3.2
Pee Dee-Lumber River	213	984	79.8	84.8	15.5	10.6	4.7	4.6
Coastal Plains	214	675	75.7	90.0	15.9	9.3	8.4	.7
Piedmont	581	2,341	78.5	85.8	16.9	9.7	4.6	4.5
Georgia-Florida	187	663	83.4	86.1	11.2	13.3	5.4	.6
Total for study area:								
14 to 24 years old	4,438	1,259	26.3	39.4	71.6	59.1	2.1	1.5
25 to 34 years old	2,333	518	31.9	42.7	62.0	48.4	6.1	8.9
55 years and over	1,410	5,509	80.0	86.1	15.6	10.5	4.4	3.4

Source: 1964 Census of Agriculture.

Table 25.--Part-time and part-retirement tobacco farmers by race, study area, 1964

Study area (production area and State part)	Total farmers		Race			
			White		Negro and other races	
	Part-time	Part-retirement	Part-time farmers	Part-retirement farmers	Part-time farmers	Part-retirement farmers
	Number	Number	Percent	Percent	Percent	Percent
Total for study area..........	4,990	3,062	58.3	40.0	41.7	60.0
Tidewater....................	900	477	45.6	26.2	54.4	73.8
Pee Dee-Lumber River..........	734	555	43.6	25.9	56.4	74.1
Coastal Plains................	663	390	56.7	34.1	43.3	65.9
Piedmont......................	2,236	1,358	68.7	50.7	31.3	49.3
Georgia-Florida...............	457	282	57.8	47.5	42.2	52.5

Source: 1964 Census of Agriculture.

Table 26.--Part-time and part-retirement tobacco farmers by tenure of farmer, study area, 1964

Study area (production area and State part)	Total farmers		Tenure of farmer					
			Full-owner		Part-owner		Tenant	
	Part-time	Part-retirement	Part-time	Part-retirement	Part-time	Part-retirement	Part-time	Part-retirement
	Number	Number	Percent	Percent	Percent	Percent	Percent	Percent
Total for study area....	4,990	3,062	48.3	72.9	25.5	13.9	26.2	13.2
Tidewater..............	900	477	54.1	80.5	27.3	15.7	18.6	3.8
Pee Dee-Lumber River....	734	555	51.5	73.0	18.1	13.0	30.4	14.0
Coastal Plains.........	663	390	45.1	71.8	23.5	14.4	31.4	13.8
Piedmont...............	2,236	1,358	42.6	68.8	30.0	14.9	27.4	16.3
Georgia-Florida........	457	282	64.1	80.5	14.4	7.8	21.5	11.7

Source: 1964 Census of Agriculture.

Table 27.--Income from sources other than farm operated for all members in part-time and part-retirement tobacco farm households, study area, 1964

Income	Total, study area		Study area--production area and State part									
			Tidewater households		Pee Dee-Lumber River households		Coastal Plains households		Piedmont households		Georgia-Florida households	
	Part-time households	Part-retirement households	Part-time	Part-retirement	Part-time	Part-retirement	Part-time	Part-retirement	Part-time	Part-retirement	Part-time	Part-retirement
	Number											
All persons in household	5,093	2,910	933	488	716	527	664	375	2,333	1,166	447	354
	Percent											
Household income:												
$1-$499	3.4	21.0	5.6	19.3	5.7	19.2	3.8	20.8	2.2	22.3	1.1	22.0
$500-$999	5.5	33.4	4.8	45.5	8.9	38.3	6.2	31.2	2.7	26.4	10.3	34.8
$1,000-$1,499	7.5	20.6	8.6	17.6	7.8	18.6	8.9	27.5	5.1	19.5	15.4	24.3
$1,500-$1,999	7.4	8.3	6.5	9.8	11.9	8.5	7.2	6.4	5.3	8.6	12.8	6.8
$2,000-$2,999	17.7	5.0	19.2	1.0	22.5	7.8	18.7	5.3	16.2	4.1	13.4	9.3
$3,000-$3,999	17.4	5.5	21.7	1.2	12.6	6.6	15.6	---	18.6	9.8	12.3	1.4
$4,000-$4,999	13.2	2.2	16.8	2.5	3.7	---	12.8	2.4	13.7	3.3	11.0	1.1
$5,000 and over	27.9	4.0	16.8	3.1	21.9	1.0	26.8	6.4	35.2	6.0	23.7	.3

Source: 1964 Census of Agriculture.

Table 28.--Commercial tobacco farms by wage bills, study area, 1964

Wage bills of commercial tobacco farms	Total, study area	Study area--production area and State part										
		Tide-water, N.C. 15	Pee Dee-Lumber River			Coastal Plains, N.C. 17	Piedmont			Georgia- Florida		
			N.C. 16	S.C. 16	Total		N.C. 18	Va. 18	Total	Ga. 29	Fla. 29	Total
	Number											
Commercial tobacco farms hiring workers	69,580	9,677	4,045	7,831	11,876	23,261	11,975	7,073	19,048	3,948	1,770	5,718
	Percent											
$1-$199	18.4	11.1	16.0	21.0	19.3	9.8	29.9	37.7	32.8	16.0	15.6	15.9
$200-$499	27.5	24.2	29.6	30.8	30.4	20.8	35.2	34.2	34.9	33.5	22.7	30.2
$500-$999	23.2	26.4	24.1	23.3	23.6	25.9	19.2	16.0	18.0	24.0	20.9	23.0
$1,000-$2,499	21.5	27.3	21.9	17.3	18.8	29.2	12.3	9.8	11.4	19.0	22.0	19.9
$2,500-$4,999	7.0	8.4	6.8	5.8	6.2	10.7	2.7	1.9	2.4	5.9	7.4	6.4
$5,000-$9,999	1.9	2.2	1.4	1.5	1.5	3.0	.5	.3	.4	1.2	4.9	2.3
$10,000-$19,999	.4	.2	.2	.3	.2	.5	.2	.1	.1	.4	3.3	1.3
$20,000-$49,999	.1	.2	---	---	1/	.1	---	---	1/	---	2.5	.8
$50,000 and over	1/	---	---	---	1/	---	---	---	---	---	.7	.2

1/ Less than 0.5 percent.

Source: 1964 Census of Agriculture.

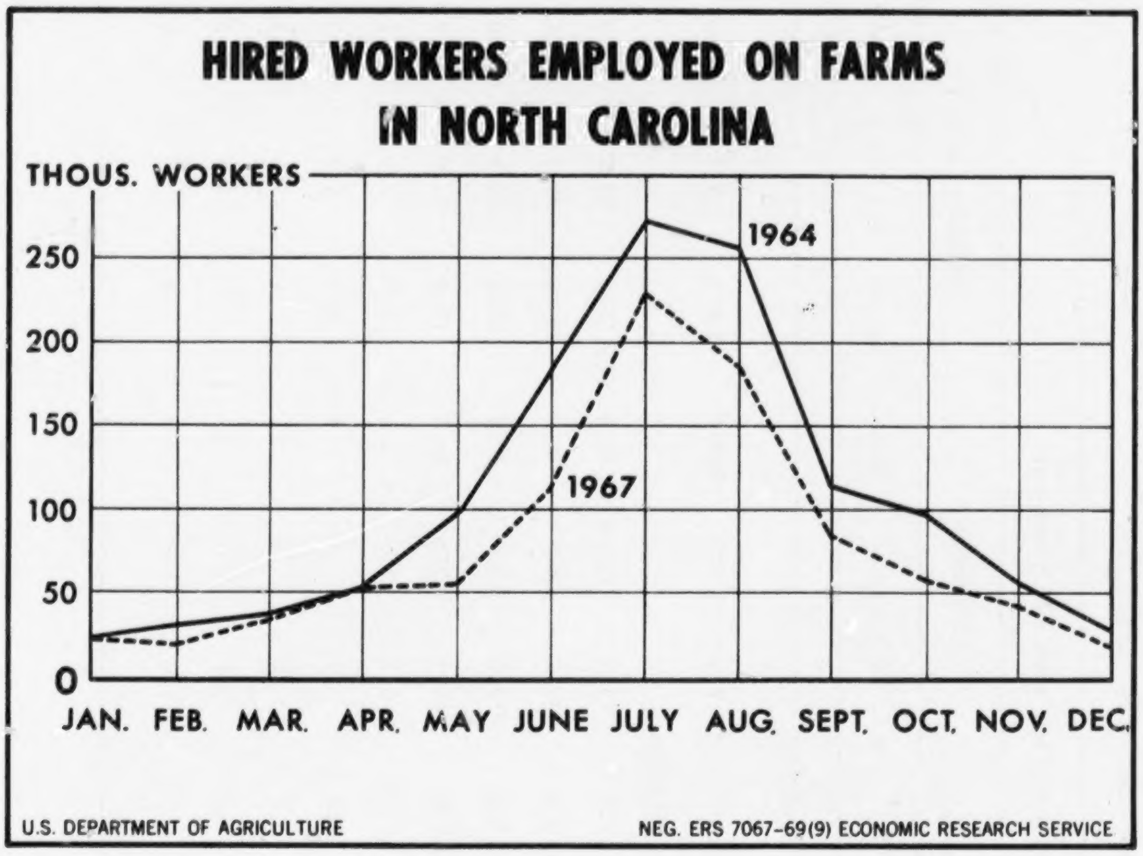

Figure 4

Of total commercial tobacco farms in the study area, 6,707 (about 8 percent) reported hiring 14,742 regular workers; 4,098 of these farms (61 percent) reported one regular hired worker, and another 21 percent reported two workers (table 29). Thus, regular hired workers are of limited relevance, numerically, in the production of flue-cured tobacco, which requires, instead, considerable seasonal labor inputs.

Some indication of the number of commercial tobacco farms in the study area hiring only seasonal workers can be derived from Census of Agriculture data. According to the Census, 6,707, or 8 percent, of total farms hired regular workers (table 29), whereas 69,580, or 83 percent, of the total hired both seasonal and regular workers (table 30). Thus, 62,873 commercial tobacco farms, or three-fourths of the total, hired only seasonal workers.

Beyond these data, statistics giving the socioeconomic characteristics of the hired labor force for the entire study area's flue-cured tobacco production were not found. For the Coastal Plain area, however, some worker characteristics are available from a joint ERS-North Carolina State University survey of about 300 farms, though the study was not conducted primarily to provide such data. The survey data cover the 1967 crop-year.

The composition of the labor force was divided into four categories for the joint survey: family workers; croppers; regular workers; and seasonal workers. Findings substantiate the earlier discussion indicating the dominance of seasonal workers during peak periods of tobacco production. During harvest, the total number of

Table 29.--Commercial tobacco farms employing regular hired workers and number of workers reported, study area, 1964

Item	Total, study area	Study area--production area and State part										
		Tide-water, N.C. 15	Pee Dee-Lumber River			Coastal Plains, N.C. 17	Piedmont			Georgia-Florida		
			N.C. 16	S.C. 16	Total		N.C. 18	Va. 18	Total	Ga. 29	Fla. 29	Total
	Number											
Farms reporting	6,707	818	272	753	1,025	2,934	832	494	1,326	309	295	604
Regular workers hired	14,742	1,523	445	1,220	1,665	5,758	1,412	754	2,166	486	3,144	3,630
1 worker	4,098	507	177	463	640	1,704	568	366	934	217	96	313
2	1,397	166	58	199	257	633	143	77	220	59	62	121
3 or 4	786	91	32	73	105	414	92	38	130	15	31	46
5 to 9	298	37	5	18	23	148	22	11	33	17	40	57
10 or more	128	17	---	---	---	35	7	2	9	1	66	67

Source: 1964 Census of Agriculture.

Table 30.--Commercial tobacco farms with wages paid to hired labor, study area, 1964

Study area (production area and State part)	Commercial tobacco farms		
	Total	Wage payments	
	Number	Number	Percent
Tidewater:			
N.C. 15	10,492	9,677	92.2
Pee Dee-Lumber River:			
N.C. 16	4,543	4,045	89.0
S.C. 16	9,670	7,831	81.0
Total	14,213	11,876	83.6
Coastal Plains:			
N.C. 17	25,498	23,261	91.2
Piedmont:			
N.C. 18	16,574	11,975	72.3
Va. 18	10,917	7,073	64.8
Total	27,491	19,048	69.3
Georgia-Florida:			
Ga. 29	4,536	3,948	87.0
Fla. 29	2,015	1,770	87.8
Total	6,551	5,718	87.3
Total for study area	84,245	69,580	82.6

Source: 1964 Census of Agriculture.

persons per harvest crew varied from 13 workers on small farms (averaging 3.9 acres of tobacco) to 18 workers on large farms (averaging 32.4 acres of tobacco). Of the 13 workers on small farms, 10 were seasonal hired and three were family members. On large farms, the average crew consisted of two regular hired workers, three croppers, two family members, and 11 seasonal hired. During transplanting, the average size of crews varied from five for small farms to 10 for large farms. On small farms, three workers were seasonal and two were family members. On large farms, seven seasonal workers and three family workers comprised the average crew.

The duration of seasonal worker activities averaged 3.9 days per farm for plant pulling, 3.7 days for transplanting, 2.9 days for topping, and 3.3 days for chopping. Seasonal workers engaged as primers had the longest duration of seasonal work--16.6 days during the 6-week harvesting season. Duration of work for croppers in tobacco production averaged 3.6 months, for regular hired workers, 11 months.

A majority of the seasonal and regular hired workers were Negro. Among seasonal workers, Negroes represented 50 to 75 percent of the total, depending on the type of activity; among regular workers, Negroes represented 85 percent.

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Most of the seasonal workers were over 16 except for those engaged in tobacco hauling. Here, a large proportion were white and under 16.

Among family workers, wives of farm operators or of other members of operator households comprised 36 percent of the total and had a median age of 46. Sons constituted about 32 percent, with a median age of 16; daughters about 22 percent, with a median age of 15; and other family members, the remaining 10 percent.

No information on educational attainment was collected for seasonal workers. Average educational attainment of croppers was 4.3 years, but for members of their households, education averaged 8 years for males and 4.8 years for females. For regular hired workers paid by the month, educational attainment was only 1.4 years; those paid by the week had averaged 5.2 years of school. The majority of regular hired workers, however, were paid by the day and had 3.9 years of school.

Seasonal workers were paid mostly by the hour, with rates ranging from $0.77 for choppers to $1.22 for primers. Male croppers who also worked for the operator averaged $1.06 per hour, while male and female members of the cropper family received $0.98 and $0.83 per hour.

In summation, hired workers in tobacco production currently are employed on a highly seasonal basis and for this they are poorly compensated. In addition, tobacco farm operators and members of their households who might also be displaced by mechanization are disadvantaged by age and educational attainment relative to the U.S. work force they would be trying to enter. Reemployment alternatives appear to be rather severely limited. Successful transition to nonfarm work would depend on a number of factors. Important among these is the level of economic activity, especially within the region. The types of expanding industry and the job requirements of these industries relative to the qualifications of those displaced need to be examined. An analysis of these and other factors relative to the problem of reemployment follows.

IV. POPULATION, LABOR FORCE, AND ECONOMIC ACTIVITY

Population and Migration

The study area had an estimated total population of 4.1 million persons in 1966. This figure represented an increase of 0.3 million, or 8.1 percent, from the 3.8 million total population in 1960 (table 31). In 1960, the most recent year with data available, the farm segment of the population was about 900,000, or 22 percent of the total. In 1966, the Piedmont and Coastal Plain production areas were the most populated, with 1,375,000 and 854,000 persons; about 900,000 lived in the metropolitan areas of Durham, Greensboro, and Winston-Salem-High Point, all in the Piedmont, and Raleigh in the Coastal Plain.

During 1960-66, each of the five delineated production areas had an increase in population; these ranged from a low of around 28,000 in the Tidewater to about 104,000 in the Piedmont. Conversely, each of the production areas had a net outmigration during the period, which ranged from 6,300 in the Piedmont to 25,400 in the Tidewater and totaled 69,500 for the combined flue-cured areas. However, three of the comprising State parts--N.C. 18, N.C. 16, and Fla. 29--had significant net inmovements. These State parts contain the Piedmont metropolitan areas listed above as well as Fayetteville and Tallahassee.

Nonmetropolitan areas of the flue-cured belt had a net outmovement of 115,900 people for 1960-66 and a population increase of only about 5 percent, compared with an increased metropolitan population of around 15 percent. Even so, about 70 percent of the 1966 population lived in nonmetropolitan areas (table 32).

No breakdown of outmovement by race is available, but counties of substantial recent outmigration have sizable Negro populations and furnish many of the migrants who move into metropolitan cities of the Northeast. During the 1950's, two-thirds of the net migration from nonmetropolitan flue-cured areas was Negro and one-third, white.

From 1950 to 1960, net outmigration from nonmetropolitan parts of the total flue-cured area amounted to 386,000 persons, an annual average of 38,600, compared with an annual nonmetropolitan average of about 19,000 from 1960 to 1966. Thus, outmigration appears to have slackened.

Childbearing

The latest data on lifetime childbearing of the female population of the study area are those of the Census of Population for 1960. At that time, the total female population aged 35 to 44 living in the rural districts and small cities of the study area had averaged 3,287 children ever born per 1,000 women. This average is somewhat higher than the national one of 3,042 children per 1,000 women in rural areas and small cities. The study area average is at a level sufficient, if continued, to increase the area's population by about 50 percent in each generation, or in about every 25 to 27 years. Thus, there is substantial--although not extreme--population pressure there on the supply of available jobs.

Table 31.--Population, net migration, and rate of migration, study area, 1960-66

Study area (production area and State part)	Population 1/				Net migration 1/	
	1966	1960	Amount change	Percentage change	1960-1966	Rate of migration 2/
	Thousands	Thousands	Thousands	Percent	Thousands	Percent
Tidewater:						
N.C. 15	540	512	28	5.5	-25.4	-5.0
Pee Dee-Lumber River:						
N.C. 16	408	355	53	14.8	3.2	.9
S.C. 16	270	256	14	5.6	-14.3	-5.6
Total	678	611	67	11.0	-11.1	-1.8
Coastal Plains:						
N.C. 17	854	800	54	6.7	-19.2	-2.4
Piedmont:						
N.C. 18	1,041	951	90	9.5	5.6	.6
Va. 18	334	320	14	4.6	-11.9	-3.7
Total	1,375	1,271	104	8.2	-6.3	-.5
Georgia-Florida:						
Ga. 29	331	315	16	5.1	-16.1	-5.1
Fla. 29	363	323	40	12.5	8.6	2.7
Total	694	638	56	8.8	-7.5	-1.2
Total, study area	4,142	3,832	310	8.1	-69.5	-1.8

1/ Figures are rounded to the nearest thousand without being adjusted to group totals.
2/ Rate is expressed as percentage at beginning of decade.

Source: "Current Population Reports, Estimates of the Population of Counties, July 1, 1966," Series P-25, Nos. 401 and 404, Bureau of the Census.

Table 32.--Population by metropolitan and nonmetropolitan areas, percentage change, net migration, and rate of migration, study area, 1960-66

Study area (production area and State part)	Population											
	Metropolitan area		Percentage of 1966 total		Nonmetropolitan area		Percentage change, 1960-66		Net migration 1960-66		Rate of migration 1/	
	1966	1960	Metro.	Non-metro.	1966	1960	Metro.	Non-metro.	Metro.	Non-metro.	Metro.	Non-metro.
	Thou.	Thou.	Pct.	Pct.	Thou.	Thou.	Pct.	Pct.	Thou.	Thou.	Pct.	Pct.
Tidewater:												
N.C. 15	95	92	17.6	82.4	445	420	3.7	6.0	-3.4	-22.0	-3.7	-5.2
Pee Dee-Lumber River:												
N.C. 16	195	148	47.8	52.2	213	207	31.8	2.9	17.2	-14.0	11.6	-6.8
S.C. 16	---	---	---	100.0	270	256	---	5.5	---	-14.3	---	-5.6
Total	195	148	28.8	71.2	483	463	31.8	4.3	17.2	-28.3	11.6	-6.1
Coastal Plains:												
N.C. 17	202	169	23.7	76.3	652	631	19.2	3.4	15.8	-35.0	9.3	-5.5
Piedmont:												
N.C. 18	681	614	65.4	34.6	360	337	11.0	6.8	11.7	-6.1	1.9	-1.8
Va. 18	---	---	---	100.0	334	320	---	4.6	---	-11.9	---	-3.7
Total	681	614	49.5	50.5	694	657	11.0	5.6	11.7	-18.0	1.9	-2.7
Georgia-Florida:												
Ga. 29	---	---	---	100.0	331	315	---	5.1	---	-16.1	---	-5.1
Fla. 29	87	74	24.0	76.0	276	249	17.6	10.9	5.1	3.5	6.9	1.4
Total	87	74	12.5	87.5	607	564	17.6	7.6	5.1	-12.6	6.9	-2.2
Total for study area	1,260	1,097	30.4	69.6	2,881	2,735	14.9	5.3	46.4	-115.9	4.2	-4.2

1/ Rates are expressed as percentage of population at beginning of 1960.

Source: "Current Population Reports, Estimates of the Population of Counties, July 1, 1966," Series P-25, Nos. 401 and 404, Bureau of the Census.

However, the childbearing rate differs greatly between the white and Negro populations. White women aged 35 to 44 living in rural areas and small cities, averaged 2,860 children ever born per 1,000 women, whereas Negro women averaged 4,510 children per 1,000 women. With this level of childbearing, the Negro population is more than doubling itself in each generation, while the white population is increasing by only about one-third. Thus, there is a rapid potential buildup of the Negro labor force. Further, Negroes have historically participated least in industrial work, and the most intensive flue-cured tobacco areas employ many Negro farmers and hired farmworkers. From these facts taken together, we must conclude that any substantial reduction of employment in tobacco farming through technological and marketing changes would have greatest impact on the Negro component of the population dependent on this employment. The level of childbearing in the rural Negro population thus requires that substantial local job expansion be achieved if a satisfactory level of employment in the area is to be maintained and if outmigration is to be lowered.

Labor Replacement Rates

Since 1960, about 200 rural young white males in the study area have been reaching working age (defined as age 20) for every 100 older rural white males expected to die or retire in the same period. In the rural male Negro population, 300 youths have been reaching working age for every 100 older Negro men likely to die or retire. Both of these rates are higher than the corresponding U.S. rates of 170 to 100 for whites and 239 to 100 for Negroes. And they are another illustration of the excessive supply of workers growing up in rural parts of the study area.

Labor Force and Economic Activity

Latest data available for developing some relevant socioeconomic comparisons between this study's delineated flue-cured tobacco belt and the Nation as a whole are from the 1960 Census of Population. The selected comparisons developed from that data show that the belt lagged significantly behind the 1960 U.S. average educational attainment, both per capita and family income, and white-collar employment (table 33). All 98 counties in the belt were below the national average in both per capita and median family income. Educational attainment was below the U.S. average in 92 of the counties, and the proportion of the labor force employed in white-collar jobs was below the national average in 93 counties. Even so, other data show that the belt as a whole has made significant progress during the 1960's, some of which is discussed below.

Labor Force and Employment Change

In 1967, the combined civilian labor force of the five flue-cured production areas in the study was 1,621,310; 1,556,365, or 96 percent, were employed; and 64,945, or 4 percent, were unemployed (table 34). Thus, the belt contained about 2.2 percent of the Nation's civilian labor force and had an unemployment rate only slightly higher than the U.S. average of 3.8 percent.

In 1962, unemployment in the area was 5.8 percent. Hence, the unemployment rate dropped by 1.8 percentage points during 1962-67, Table 33.--Study area by education, income, and proportion of population employed in white-collar jobs, 1960

Study area (production area and State part)	Total	Counties under U.S. average in below areas			
		Median years of school completed 1/	Per capita income 2/	Median family income 3/	Employed white-collar workers 4/
	-------------------------Number-------------------------				
Tidewater:					
N.C. 15..............	18	17	18	18	17
Pee Dee-Lumber River:					
N.C. 16..............	6	5	6	6	6
S.C. 16..............	5	5	5	5	5
Coastal Plains:					
N.C. 17..............	14	13	14	14	13
Piedmont:					
N.C. 18..............	13	12	13	13	12
Va. 18..............	9	9	9	9	9
Georgia-Florida:					
Ga. 29..............	19	19	19	19	19
Fla. 29..............	14	12	14	14	12
Total..............	98	92	98	98	93

1/ Median years of school completed by persons 25 years old and over was 10.6 years in the United States in 1960.

2/ U.S. average per capita income was $1,850 in 1959.

3/ U.S. median family income was $5,660 in 1959.

4/ U.S. proportion of persons employed in white-collar jobs was 41 percent in 1960.

Source: Per capita income data compiled from U.S. Census of Population, 1960; all other data from County and City Data Book--1962.

Table 34.--Employed and unemployed members of civilian labor force, study area, 1967

Study area (production area and State part)	Civilian labor force	Employed		Unemployed	
	Number	Number	Percent	Number	Percent
Tidewater:					
N.C. 15	172,470	163,320	94.7	9,150	5.3
Pee Dee-Lumber River:					
N.C. 16	133,690	126,740	94.8	6,950	5.2
S.C. 16	90,720	84,920	93.6	5,800	6.4
Total	224,410	211,660	94.3	12,750	5.7
Coastal Plains:					
N.C. 17	347,090	332,700	95.9	14,390	4.1
Piedmont:					
N.C. 18	491,460	475,320	96.7	16,140	3.3
Va. 18	135,270	130,925	96.8	4,345	3.2
Total	626,730	606,245	96.7	20,485	3.3
Georgia-Florida:					
Ga. 29	113,330	108,760	96.0	4,570	4.0
Fla. 29	137,280	133,680	97.4	3,600	2.6
Total	250,610	242,440	96.7	8,170	3.3
Total for study area	1,621,310	1,556,365	96.0	64,945	4.0

Source: North Carolina Work Force Estimates by Counties, Area, and State, August 1968. Prepared by the Bureau of Employment Security Research, Employment Security Commission of North Carolina: Raleigh, N.C. South Carolina's Manpower in Industry, Work Force Estimates, State, Standard Metropolitan Statistical Areas, Counties, May 1968. Research and Statistics Section, South Carolina Employment Security Commission, Columbia, S.C. Population and Work Force Data, July 1968. Prepared by Research Statistics and Information Division, Virginia Employment Commission. Georgia Civilian Work Force Estimates by Area, March 1962 and April 1967, Georgia Department of Labor, Employment Security Agency, September 1968. Basic Labor Market Information, Research and Statistics Department, Florida Industrial Commission, Tallahassee, Fla.

while the labor force increased by about 188,000, or 13 percent. On balance, this change was a 15-percent increase in employment for the period and indicates significant economic progress in the study area. The increase was not equally distributed within the area, however, and as indicated earlier, outmigration pressured by high birth rates, continued from rural portions.

The rate of metropolitan employment growth in the study area was more than double that in nonmetropolitan areas. The metropolitan unemployment rate dropped to 2.9 percent--a level low enough for us to consider the area as having full employment--while the nonmetropolitan rate remained above this level at 4.6 percent (table 35).

Significantly, agriculture is a large employer in the flue-cured areas; it comprised about 13 percent of total employment in

Table 35.--Civilian labor force, unemployment, and rate of unemployment for metropolitan and nonmetropolitan areas, study area, 1962-67

Study area (production area and State part)	Civilian labor force								Unemployment				Unemployment rate			
	Metropolitan area		Nonmetropolitan area		Percentage of 1967 total		Percentage change 1962-67		Metropolitan area		Nonmetropolitan area		Metropolitan area		Nonmetropolitan area	
	1967	1962	1967	1962	Metro.	Non-metro.	Metro.	Non-metro.	1967	1962	1967	1962	1967	1962	1967	1962
	Thou.	Thou.	Thou.	Thou.	Pct.	Pct.	Pct.	Pct.	Thou.	Thou.	Thou.	Thou.	Pct.	Pct.	Pct.	Pct.
Tidewater:																
N.C. 15	40	33	133	123	23	77	21	8	1.9	2.4	7.3	9.1	4.7	7.4	5.5	7.4
Pee Dee-Lumber River:																
N.C. 16	51	37	83	74	36	62	38	12	1.9	2.1	5.1	6.3	3.7	5.8	6.1	8.6
S.C. 16	---	---	91	80	---	100	---	14	---	---	5.8	5.5	---	---	6.4	6.9
Total	51	37	174	154	23	77	38	13	1.9	2.1	10.9	11.8	3.7	5.8	6.3	7.7
Coastal Plains:																
N.C. 17	99	78	248	235	28	72	26	6	2.4	2.6	12.0	15.7	2.5	3.3	4.8	6.7
Piedmont:																
N.C. 18	338	286	154	143	69	31	18	7	9.6	12.0	6.6	9.5	2.8	4.2	4.3	6.6
Va. 18	---	---	135	125	---	100	---	8	---	---	4.3	5.6	---	---	3.2	4.5
Total	338	286	289	268	54	46	18	8	9.6	12.0	10.9	15.1	2.8	4.2	3.8	5.6
Georgia-Florida:																
Ga. 29	---	---	113	104	---	100	---	9	---	---	4.6	6.9	---	---	4.0	6.6
Fla. 29	41	33	96	83	30	70	24	16	.5	.8	3.1	4.5	1.2	2.4	3.2	5.4
Total	41	33	209	187	16	84	24	12	.5	.8	7.7	11.4	1.2	2.4	3.7	6.1
Total for study area	569	467	1,053	967	35	65	22	9	16.3	19.9	48.8	63.1	2.9	4.3	4.6	6.5

Source: See source for table 34.

1967, compared with about 5 percent for the entire Nation. In the nonmetropolitan areas, which contain 65 percent of the total labor force and much of the unemployment in the belt, agriculture accounted for about 20 percent of total employment in 1967. Unemployment rates were highest in the nonmetropolitan segments of the Coastal Plain, Tidewater, and Pee Dee-Lumber River production areas, where they were 4.8, 5.5, and 6.3 percent. These rates are even more significant when we consider that they do not indicate the extent of hidden unemployment and underemployment that is generally believed to be high in these areas, especially on the smaller farms. Also, these rates occurred at a time of rapid economic growth and low unemployment both nationally and for the flue-cured belt generally.

Agricultural employment in the study area declined during 1962-67 at the rapid rate of about 4 percent a year, or a total of 22 percent for the period as a whole (table 36). If this rate continues, and especially if it is accelerated by the adoption of further laborsaving innovations or a decline in the demand for tobacco (the latter affecting manufacturing as well as production employment), then proportional, compensating growth in nonfarm employment will be required for satisfactory economic and human resource adjustment. Without such growth, economic recession and increased outmigration will occur which could create problems of serious proportion.

Major Nonfarm Industry

Employment problems in the flue-cured tobacco belt do not stem from a lack of growth in nonfarm industries relative to such growth in the Nation. During 1962-67, nonagricultural employment increased by 24 percent, a rate that nearly doubled the 14-percent national growth rate. The rate of employment increases in each major nonfarm industry in the study area was higher than the national rate. The major employing nonagricultural industry at the end of the period was manufacturing, having grown by 28 percent during 1962-67; it accounted for 26 percent of total employment in the belt in 1967 (tables 36 and 37). The three other largest nonfarm employers were government, trade, and service, accounting for 15, 14, and 8 percent of total employment.

Because of its size and growth, manufacturing looms as the most probable employer of relatively unskilled persons of low educational attainment displaced from farm employment. Manufacturing is not only the largest industry in the study area, but also has a large proportion of blue-collar jobs for which displaced workers may more readily be qualified. Textile and wearing apparel firms are the greatest individual employers in the manufacturing industry for the area as a whole, but others, including those producing food, tobacco products, machinery and equipment, lumber, and furniture, are significant. The distribution varies, of course, by individual production area and especially by the comprising State parts. Detailed breakdowns indicating the magnitude of these differences by specified areas are presented in table 38.

Next to manufacturing, the two industries having the largest number of jobs that might be expected to absorb some displaced farmworkers are trade and service. The trade industry uses a large

Table 36.--Percentage change in employment by industry, study area, and United States, 1962-67

Study area (production area and State part)	Total	Manufacturing	Construction	Trade	Transportation, commerce, and public utilities	Finance, insurance, and real estate	Service	Government	Agriculture	Other
	---	---	---	---	Percent	---	---	---	---	---
Tidewater:										
N.C. 15	13	30	37	21	43	15	22	37	-25	20
Pee Dee-Lumber River:										
N.C. 16	25	45	65	21	22	34	25	47	-17	30
S.C. 16	14	80	38	27	35	33	48	40	-36	-4
Total	20	57	53	23	27	34	33	45	-26	12
Coastal Plains:										
N.C. 17	13	37	25	21	14	25	20	41	-25	12
Piedmont:										
N.C. 18	16	18	27	22	20	21	30	43	-25	7
Va. 18	10	20	54	18	2	1	24	19	-15	-5
Total	15	18	31	21	17	21	29	38	-22	4
Georgia-Florida:										
Ga. 29	12	53	7	22	16	25	33	26	-26	1/
Fla. 29	21	17	38	28	36	45	33	37	-4	-6
Total	17	40	25	25	27	36	33	34	-16	-3
Total for study area	15	28	33	22	20	29	27	39	-22	7
United States 2/	11	15	12	18	9	15	25	31	-22	-25

1/ Less than 0.5 percent.
2/ Employment and Earnings and Monthly Report on the Labor Force, Bureau of Labor Statistics, U.S. Department of Labor.

Source: See source for table 34.

Table 37.—Employment by industry, study area and the United States, 1967

Study area (production area and State part)	Total, study area and the United States	Manufacturing		Construction		Trade		Transportation, commerce, and public utilities		Finance, insurance, and real estate		Service		Government		Agriculture		Other	
	Thou. 1/	Thou. 1/	Pct.	Thou. 1/	Pct.	Thou. 1/	Pct.	Thou. 1/	Pct.	Thou. 1/	Pct.	Thou. 1/	Pct.	Thou. 1/	Pct.	Thou. 1/	Pct.	Thou. 1/	Pct.
Tidewater:																			
N.C. 15......	163	29	18	6	3	23	14	7	4	3	2	11	7	30	18	29	18	25	16
Pee Dee-Lumber River:																			
N.C. 16......	127	29	23	6	5	17	13	5	4	3	2	11	9	20	16	18	14	17	14
S.C. 16......	85	19	22	4	5	13	15	3	4	3	3	7	9	9	10	13	16	14	16
Total......	212	48	23	10	5	30	14	8	4	6	2	18	9	29	14	31	15	31	14
Coastal Plains:																			
N.C. 17......	333	66	20	15	4	48	14	11	3	11	3	26	8	52	16	58	18	47	14
Piedmont:																			
N.C. 18......	475	172	36	21	4	65	14	19	4	16	3	46	10	52	11	31	7	51	11
Va. 18.......	131	53	41	5	4	14	11	3	2	2	1	8	6	11	8	19	14	17	13
Total......	606	225	37	26	4	79	13	23	4	18	3	54	9	63	11	50	8	68	11
Georgia-Florida:																			
Ga. 29.......	109	27	25	3	3	16	15	3	2	3	2	7	7	16	14	18	17	17	15
Fla. 29......	134	12	9	5	4	19	14	4	3	4	3	8	6	47	35	17	12	19	14
Total......	242	39	16	8	3	35	15	6	2	6	3	15	6	62	26	35	14	35	15
Total for study area..........	1,556	407	26	65	4	215	14	54	4	45	3	124	8	237	15	203	13	207	13
Total, United States 2/.....	74,372	19,434	26	3,203	4	13,613	18	4,271	6	3,217	4	9,970	14	11,616	16	3,844	5	5,204	7

1/ Figures are rounded to the nearest thousand without being adjusted to group totals.
2/ Employment and Earnings and Monthly Report on the Labor Force, Bureau of Labor Statistics, U.S. Department of Labor.

Source: See source for table 34.

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Table 38.--Employment in manufacturing by industry, study area and the United States, 1967

Study area (production area and State part)	Food	Tobacco	Textiles	Apparel	Lumber	Furniture	Machinery and equipment	Metals	Stone, clay, and glass	Printing and publishing	Other 1/	Chemicals
	Percent											
Tidewater:												
N.C. 15	12	1	7	20	20	2/	2	4	2/	1	30	3
Pee Dee-Lumber River:												
N.C. 16	10	1	47	5	4	4	4	1	1	2	22	2/
S.C. 16	4	2/	3	22	14	1	2/	3	1	2/	52	2/
Total	7	1	29	12	8	3	2	2	1	1	34	2/
Coastal Plains:												
N.C. 17	12	7	9	16	6	1	17	2	1	2	22	5
Piedmont:												
N.C. 18	5	14	43	5	1	7	8	2	2/	2	13	2/
Va. 18	1	1	20	4	9	17	2/	2/	2	1	45	2/
Total	4	10	38	5	2	9	6	2	1	2	21	2/
Georgia-Florida:												
Ga. 29	13	2/	2/	27	16	2/	2	8	1	1	30	2
Fla. 29 3/	---	---	---	---	---	---	---	---	---	---	---	---
Total for study area	7	7	27	10	6	6	7	2	1	2	24	1
Total, United States 4/	9	1	5	7	3	3	30	14	3	9	11	5

1/ The category "other," for some counties, includes employment in industries listed in this table heading, but this employment was included in "other" to avoid disclosure of information for individual establishments.

2/ Less than 0.5 percent.

3/ Not available.

4/ Employment and Earnings and Monthly Report on the Labor Force, Bureau of Labor Statistics, U.S. Department of Labor.

Source: See source for table 34.

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proportion of relatively low-skilled sales and clerical workers, as well as semiskilled blue-collar and clerical-sales personnel. Employment requirements in much of the service industry, such as laundry and cleaning plants and lodging and eating establishments, indicate a potential for absorbing some displaced farmworkers. Although trade is a relatively small employer in the belt, accounting for 14 percent of total employment in 1967, compared with 18 percent nationally, employment in this industry increased by 22 percent (about 39,000 jobs) during 1962-67 and portends further growth. The transportation and construction industries, which require a relatively large proportion of highly skilled workers, may offer some limited employment opportunities. Government, communications, and finance-insurance-real estate offer farmworkers less opportunity for employment because of the large proportion of skilled clerical and professional workers employed.

Because further disaggregation produces a vast amount of detail, the foregoing discussion has centered primarily on the delineated flue-cured tobacco area as a whole. However, there are considerable differences between the comprising production areas and State parts that may be of interest to those concerned with development, employment, training, welfare, and other matters in a particular segment of the area, as well as to those concerned with the whole area. Thus, a brief discussion of State parts and their production areas is presented in the appendix.

APPENDIX

Production Areas and State Parts

Where a subregion consists of parts of two States, the discussion that follows is presented separately for each State part.

Tidewater

As delineated for this study, the Tidewater production area contains only the Census subregion N.C. 15, which consists of a strip of counties along the eastern seacoast of North Carolina. The area has slightly over half a million people, about 13 percent of the total flue-cured area population. It's one Standard Metropolitan Statistical Area, Wilmington, had a higher unemployment rate (4.7 percent) than other SMSA's in the tobacco region. Moreover, Wilmington had the slowest growing population of all SMSA's in the tobacco region and was the only one with net outmigration.

The Tidewater area now contains only one metropolitan center, but other population centers in the area are becoming metropolitan in nature. The total area is largely rural, with 77 percent of the labor force employed in nonmetropolitan areas. Thus, the Tidewater already has the problem of achieving a rate of economic growth adequate to expand job development and reduce unemployment. With agricultural employment declining but continuing to be very important in the Tidewater, this problem is likely to become more difficult. Agricultural employment declined by 25 percent during 1962-67. Nonetheless, agriculture remained one of the three largest employers in 1967. The other two were manufacturing and government. Each represented about 18 percent of the total. Combined with trade (14 percent of total employment), these four industries accounted for about 70 percent of all employment (table 37). Employment growth in each of the three major nonfarm industries was above the national average for 1962-67. This indicates a healthy trend in the area. The 30-percent employment increase in manufacturing was twice the national increase (table 36). The apparel and lumber industries were the largest manufacturing employers in the area (table 38).

Pee Dee-Lumber River

The production area consists of Census subregion North Carolina 16 and South Carolina 16; geographically, about equal parts are located in each of the two States.

North Carolina 16. This State part had a population of about 400,000 persons, or 10 percent of the tobacco area's population in 1966. This level represented an increase of 14.8 percent from 1960 and the greatest percentage change (though not the greatest absolute change) for any area in the belt during 1960-66 (table 31). Employment also rose rapidly, increasing by 25 percent from 1962 to 1967. These growth figures were influenced greatly by the State part's one SMSA, Fayetteville, which had an increase of 31 percent in population and 40 percent in the labor force. The nonmetropolitan segment had a much lower growth rate in population (2.9 percent) and a moderately lower (12 percent) growth rate in the labor force (tables 32 and 34).

Despite the rapid growth in the labor force, job expansion more than kept pace. And the unemployment rate, which had been 7.7 percent in 1962, dropped to 5.2 percent in 1967. An area with a 5.2-percent rate of unemployment is a matter of concern, of course, especially in a time of low overall unemployment such as 1967 (the national average was 3.8 percent). Nonetheless, the 2.5-percentage point drop in unemployment was a significant achievement in view of the large and simultaneous increase in the labor force--some of which was the result of inmigration. While the nonmetropolitan segment had a net outmovement of about 14,000 people, this loss was more than compensated for by the net inmovement of 17,000 to the metropolitan segment (table 32).

The four largest employers were government, manufacturing, agriculture, and trade. Combined, they accounted for two-thirds of total employment. Within manufacturing, the textile industry employed the most people (table 38).

South Carolina 16. This State part has no metropolitan area, and with only 270,000 people (7 percent of the flue-cured belt total population), it is the smallest State part in the belt. The net outmigration rate of 5.6 percent for 1960-66 was the highest in the flue-cured belt. South Carolina 16 also had the largest proportion of farm residents (39 percent of the State part's population), the largest proportion of Negroes (44 percent), and the highest unemployment rate (6.4 percent) of all State parts in 1967.

Manufacturing, agriculture, trade, and government, the four largest industries, employed nearly two-thirds (63 percent) of the State part's workers in 1967 (table 37). While both trade and government showed substantial gains in employment for the period--gains above the national average--manufacturing showed a spectacular increase--about 80 percent. However, the effects of these gains were mitigated somewhat by the 36-percent drop in agricultural employment. Within manufacturing, apparel and lumber were the largest single employers.

Even though the high rates of unemployment and outmigration signify a lack of employment opportunities in this area, the growth in nonagricultural employment is encouraging. This employment growth in 1962-67 was sufficient to offset the decline in agricultural employment and to be slightly above the national average but slightly below that for the total belt (table 37). Another encouraging note is the scheduled construction of interstate route 95, south from North Carolina through the tobacco region of South Carolina. Increased accessibility to the area between the heart of the South Carolina tobacco region and the SMSA's of Columbia and Augusta should enhance economic activity and, hence, employment in the area.

Coastal Plains

The Coastal Plains portion of the production area coincides with Census subregion N.C. 17. It is the second largest Census subregion in the production area in population and in employment. Latest available data showed that 854,000 people lived in the subregion and the civilian labor force totaled 347,090 (tables 31 and

34). While the population increased 6.7 percent from 1960 to 1966, outmigration during this period was 19,200--the second highest of all outmigration from any Census subregions in the flue-cured belt. Employment, however, increased 11 percent from 1962 to 1967, and unemployment dropped from 5.8 to 4.1 percent.

Raleigh, the one large metropolitan area, accounted for about one-fourth of the population and for most of the 1962-67 growth in population (19.2 percent) and labor force (26 percent). The nonmetropolitan sector had increases of 3.4 percent in population and 6 percent in labor force. As a result of these changes, unemployment dropped from 3.3 to 2.5 percent in metropolitan districts and from 6.7 to 4.8 percent in nonmetropolitan districts (table 34). Although the unemployment rate remains lower in metropolitan areas, the larger drop of nearly 2 percentage points in the nonmetropolitan areas--where about three-fourths (652,000) of the population of this State part reside--was an important and significant achievement.

Manufacturing was the dominant employer in this State part, though not to the extent that it was in some subregions, although it had the third highest gain for the 1962-67 period (37 percent) and in 1967 employed 66,000 people, or 20 percent of the labor force (tables 36 and 37). Government employment had the highest rate of increase (41 percent) and accounted for 16 percent of total employment in 1967. Trade, which accounted for 14 percent of the area's employment in 1967, showed a substantial increase from 1962 as did all other nonfarm industries. Conversely, agricultural employment declined by 25 percent for the 1962-67 period.

Piedmont

The Piedmont contains two State parts, N.C. 18 and Va. 18, which are of about equal size, geographically. It has the largest population and labor force (located mostly in N.C. 18) of any of the production areas.

North Carolina 18. This State part, located in the northwestern area of the tobacco belt, had the largest population in 1966 (1,041,400) and was the most urbanized (approximately two-thirds of the population residing in the metropolitan districts) of all State parts in the flue-cured production area. In 1960, most of the people lived within the two SMSA's of Durham and Greensboro-Winston-Salem-High Point. N.C. 18 had the smallest proportion of Negroes (24 percent of the State part's population), the smallest proportion of families with poverty-level income (28 percent), and the smallest proportion of rural farm people (14 percent) of all State parts. Nonetheless, these proportions are higher than those for the United States.

The 1967 unemployment rate was 3.3 percent, which was lower than the national rate of 3.8 percent. The low rate indicates a good probability that this State part will be able to absorb additions to the labor force.

The major employing industry was manufacturing, which accounted for 36 percent of total employment. This proportion is considerably larger than in any other State part except in the Virginia part of subregion 18. Here, manufacturing accounted for 41 percent of total employment. Other major employers in N.C. 18 were trade (14 percent), government (11 percent), and service (10 percent). Together with manufacturing, they accounted for 71 percent of total employment. This State part is the only one in the tobacco region in which agriculture, with 7 percent of total employment, was not one of the major employers (table 37).

Within manufacturing, textiles was the dominant employer with 43 percent of total manufacturing employment. Tobacco manufacturing was second with 14 percent (table 38).

Virginia 18. Characteristics that this part of subregion 18 shared with the part located in North Carolina were a low unemployment rate, 3.2 percent, and a large proportion of total employed persons engaged in manufacturing, 41 percent (tables 34 and 35).

However, Va. 18 differed from N.C. 18 in a number of important respects. It had the slowest overall employment growth of any State part in the flue-cured belt during 1962-67--10 percent. This rate was slightly below the national average of 11 percent and one-third less than the average of 15 percent for the flue-cured belt. Also, the Virginia part was one of the least urbanized State parts, containing no metropolitan counties, and one of the smaller State parts, containing about a third of a million people, or 8 percent of the total flue-cured area population. Finally, the Virginia portion of subregion 18 differs from the North Carolina component in that agriculture replaced service as one of the four major employing industries.

Georgia-Florida

The Georgia-Florida production area is about equally distributed between the two States. The Georgia State part (Ga. 29) is entirely rural, and tobacco is grown rather uniformly over the entire area; the Florida portion has a metropolitan area with much government employment, and flue-cured tobacco is grown only in the eastern portion. Thus, the two State parts differ substantially in population density and employment distribution by industry.

Georgia 29. In 1966, the Georgia portion of the subregion had a population of 331,000 people, the second smallest of all State part populations in the flue-cured belt. The 1960-66 increase of 5.1 percent was the next to the lowest rate of gain occurring in any State part. Significantly, net outmigration for 1960-66 was 16,100 people, or 5.1 percent--the second highest of all State part rates (table 31).

The 1967 civilian labor force totaled 113,000, an increase of 9 percent from 1962. During this period, the area was able to absorb the increase and, at the same time, reduce the rate of unemployment from 6.6 percent to 4.0 percent.

Manufacturing was the major employer in the area, with 25 percent of total 1967 employment. From 1962 to 1967, manufacturing employment increased 53 percent. Within manufacturing, the apparel industry was the larger employer (tables 36,37, and 38).

This area is characterized by the same general employment features as other nonmetropolitan parts of the tobacco belt--employment growth in nonfarm industries and declining though still important employment in agriculture.

Florida 29. The Florida portion of the subregion had a 1966 population of 363,000, an increase of 12.5 percent from 1960 and one exceeded in the belt only by the increase of 14.8 percent in the North Carolina portion of subregion 16. The net inmigration rate of 2.7 percent for Florida 29 was the highest of any State part rate in the flue-cured tobacco region.

During the same period, the civilian labor force increased by 24 percent in the metropolitan segment and 16 percent in the nonmetropolitan segment. On balance, this was an 18-percent increase. The unemployment rate of 2.6 percent (March 1967) was not only the lowest in the tobacco belt but was considerably lower than the national average of 3.8 percent. All of these data reflect favorable economic progress and a high probability that the area could absorb additional workers.

Only 12 percent of the Florida State part's population lived on farms in 1960, the smalles proportion in the tobacco area; however, agriculture accounted for 12 percent of total employment, a proportion which was about the same as the 13-percent average for the flue-cured areas as a whole (table 37). The Florida portion had, by far, the smallest proportion of its labor force involved in manufacturing (9 percent) of any State part in the tobacco area. Government was the dominant employer, with 35 percent of the total work force followed by trade with 14 percent (table 36). This is attributable mainly to the fact that Tallahassee, the State capital, is located in this State part. The unemployment rate in the metropolitan segment was a very low 1.2 percent, and a healthy 3.2 percent in the nonmetropolitan segment.